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FROM

the Board of Agriculture.

6 May, 1892

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THIRTY-THIRD ANNUAL REPORT

OF THE

Ohio State Board of Agriculture,

WITH AN ABSTRACT OF THE PROCEEDINGS OF THE

COUNTY AGRICULTURAL SOCIETIES,

TO THE

GENERAL ASSEMBLY OF OHIO

FOR THE YEAR 1878.

COLUMBUS:
NEVINS & MYERS, STATE PRINTERS.
1879.

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REPORT

OF THE

OHIO STATE BOARD OF AGRICULTURE,

FOR THE YEAR 1878.

In accordance with the law creating the Ohio State Board of Agriculture, I herewith submit to the General Assembly of Ohio the thirty-third annual report of the Board, embracing, as required by the law, abstracts of the proceedings of the several county agricultural societies, and such other matter as has been deemed interesting and useful.

The compilation of matter for this report, though being for the year 1878, was not begun until after the meeting of the annual agricultural convention, January 7, 1879. This, however, is no deviation from the rule of former years. The matter could not be sooner prepared, from the fact that the several county societies cannot make their reports until the close of the year, and are not required to deliver the reports to the President of the Ohio State Board of Agriculture until at the time of the annual agricultural convention in each year. After the receiving of these reports it requires from two to three months' time in making tables of abstracts, corrections, etc. Then we are unable to get the statistics of crops for any one year until July of the following year, and it requiring about three months to print and bind the twenty thousand copies of the report, renders it next to impossible to have the report ready for distribution until the fall of the year.

The present report, besides the proceedings of the Board, reports from county societies, statistics of live stock, crops, etc., and the proceedings of the State Horticultural Society, contains articles and translations from several of our well-known agricultural writers. To such as are interested in the agricultural prosperity of the State they will prove interesting and valuable.

The reports from the several county agricultural societies indicate that the results of the year 1878 have been exceedingly gratifying to the agriculturists of the State. Crops of all kinds yielded abundantly, and especially is this true of the wheat crop, it being the largest yield for many years past. Reports to this department show, in many instances, yields of from thirty to forty-five bushels per acre.

Crops sustained but little damage by insects. The Colorado potato beetle is still in the land, but the farmers have managed to counteract its destructive proclivities, so that the damage to the potato crop from this source, generally speaking, was light.

During the year, hog cholera prevailed in nearly every section of the State, and the loss of swine by this scourge has been almost unparalleled. As yet science has demonstrated no specific remedy for the disease. N. S. Townshend, Professor of Agriculture in the Ohio University, has given the disease much attention, and in his article on the "losses occasioned by the diseases of domestic animals," he makes special mention of hog cholera.

As will be seen by the reports of the several committees, the State Fair of 1878, in point of exhibition, was a decided success; and though not so in a pecuniary sense, on account of unfavorable weather, the Board feel encouraged that its efforts in the promotion of agriculture and the mechanic arts have not been in vain, as is evidenced by the improved crops, better strains of live stock, improved agricultural machinery, etc., exhibited at each succeeding fair.

The State Board of Agriculture, having for its object the advancement of agriculture, horticulture, and the mechanic arts, has, during its existence, offered nearly a quarter of a million of dollars in cash for premiums, for the purpose of calling together the best products of the soil and dairy, the latest improvements in machinery and implements for aiding agriculture, manufacturing, and lightening the burdens of the household, that all might be shown in one grand exhibition, when the people, stimulated and encouraged by competition, might be excited to a spirit of rivalry and emulation in all that relates to true progress in the various industries of the State.

A majority of the county agricultural societies are reported in a prosperous condition, and the interest manifested by the people of the counties in all that pertains to improvement in agriculture and stock-breeding insures the future prosperity of the county societies.

Since the preparation of the matter for the report of 1877, the State, and especially the agriculturists of the State, have met with a sad and almost irreparable loss in the death of Hon. John H. Klippart, who for nearly twenty-two years was Secretary of the Ohio State Board of Agri culture, and prepared for publication the annual reports. He was elected to the position in the winter of 1856, and continued in office until the time of his decease, October 25, 1878; was a constant student and a hard worker, his greatest ambition being the elevation and promotion of the great agricultural interests of the State and Nation.

The resolutions adopted by the Board, expressive of the life, character, and public services of the late Secretary Klippart, will be found embodied in the transactions of the Board, and the action taken by the agricultural convention, in the proceedings of the convention, in addition to which I desire to quote the following from the address of his co-worker in the scientific world, President Edward Orton, of the Ohio University, which is a fitting tribute to one who for so many years devoted his life and energies to the promotion of agriculture:

"1. The first fact to which I call your attention, and the one that to my mind underlies and explains all others, is the eager love of knowledge which characterized all the years of his manhood. This was a fire that never went out—that never burned low. His eye had been opened to the order of the world. He had come to see that number and right and law underlie the varied phenomena that pass before us, and the charm of this knowledge was for him never worn out. While his range of interest was wide, it was especially natural science in its later phases that attracted him most strongly.

"He enjoyed but common or even meager opportunities for education in his early life, and to his last day he bitterly deplored this lack of early training in the fields to which he afterward devoted himself. He had reached the years of man's estate before his interest in science was aroused, and then he made good the deficiencies of his education as best he could, by labor that knew no intermission. But the cares and responsibilities of life were upon him now, and the fragments of time that could be taken from a busy and exacting career could never make amends for the lost opportunities of youth. It was his own bitter experience that led him to take so active an interest in scientific education. He counted those happy who could lay good foundations for a thorough and practical acquaintance with the great branches of science, and one of the things that lay nearest his heart was the widest possible extension of such training. He rejoiced most heartily in the revolution that has gone on in our educational schemes, within the last twenty years, by which the branches that seemed to him so rich in service to humanity are coming to their proper place.

"His early and long continued identification with the agricultural interests of the State obliged him to extend his range of thought and knowledge over a wide field, for agriculture is in some sort an epitome and condensation of all science. The breadth of the field which interested him can be judged in some degree from the books that he gathered.

"2. I note in the second place as a marked and most honorable characteristic of Secretary Klippart the desire to extend and diffuse the knowledge that he himself possessed, or the knowledge of other men that could be rendered available. He believed in science—in its adaptation to practical life. He believed that many of the ills which the world suffers are remediable ills, and that for many of them science is the proper cure, and he was instant, in season and out of season, in bringing this knowledge to the thoughts of men. I know of nothing that lay nearer to his thought and heart than this diffusion of knowledge with a practical intent. His own labors were abundant and untiring in this direction. He ransacked the practical scientific literature of Europe for contributions to the reports of the State Board of Agriculture, the preparation of which constituted so large and honorable a part of his work. These reports will remain a lasting monument to his practical sagacity and to his wide and intelligent interest in the varied phases of the great subject with which he had to do. They stand in the first rank of all such publications in this country. I know of nothing that aroused Mr. Klippart's indignation so quickly and so thoroughly as the disposition on the part of any scientific man to keep his light to himself. What he prized science for was its power of practical service; and for any man to hide his light under the bushel of exclusiveness or conceit, or to selfishly hoard his knowledge without any effort to make it stimulate and serve the masses of mankind, seemed to him a profanation of a sacred trust.

"I think that Mr. Klippart held his scientific truth in a thoroughly Christian spirit in this regard. He counted modern science as a new dispensation in its practical application to the wants of men, and he considered it a high and sacred duty to bring this light to the guidance of men, so far as in him lay.

"3. I note in the third place as a characteristic of our friend which necessarily commands our honor—his willingness to labor—the steadiness and severity of his intellectual toil. He was emphatically a hard worker. He had great tenacity of constitution —neither brain nor eye nor hand gave out, though the tasks laid upon them were excessive and unrelaxing, until many years of too arduous service had been rendered. This love of work has been implied in what I have already said, but it was so prominent a trait in the character of our friend that I cannot forbear making special mention of it here. The steadiness of his application and his mental energy, even when disease had laid its hand upon him, shamed many of us who were in sounder health. The disposition to labor, the impulse to action, was too imperious for even his strength. I take it that he was clearly a victim to prolonged overwork. He could see the law for others, but he could not apply it to his own case. There was so much to be done which none but he could do, or which none could do as well as he, that the moment that his physical strength allowed, he threw himself into the harness again. It has been painful to his friends to see through the years in which his strength and vitality were being slowly but surely sapped, his inability to rest. When rest came to him perforce in any way, the results of it were always obvious and gratifying; but he could not learn the lesson. While we regret most deeply the fact that he yielded to the temptation to overwork, to excessive mental labor, we are obliged to put a very different estimate on a misjudgment of this sort from that which we attach to the selfish and indolent life of such as go through the world getting rid of all the work they can. We cannot but honor the man who wears out in a worthy work. Wearing out has a very different place in our judgment from rusting out."

Respectfully,

JAMES W. FLEMING,
Acting Secretary.

OFFICERS AND MEMBERS OF THE BOARD.

Officers for 1878.

Jno. M. Pugh, Columbus, Franklin county	*President.*
Lucius B. Wing, Newark, Licking county	*Treasurer.*
John H. Klippart, Columbus, Franklin county (deceased Oct. 24, 1878)	*Secretary.*
Jas. W. Fleming, " " Nov. and Dec.	*Acting Secretary.*

Members for 1878.

Jno. M. Pugh	Columbus, Franklin county.
Lucius B. Wing	Newark, Licking county.
B. W. Carlisle	Hooker's Station, Fairfield county.
D. L. Pope	Welshfield, Geauga county.
Leo Weltz	Wilmington, Clinton county.
Chas. Smith	Marion, Marion county.
E. T. Stickney	Republic, Seneca county.
E. A. Stone	Gallipolis, Gallia county.
Peter Murphy	Hughes' Station, Butler county.
W. N. Cowden	Quaker City, Guernsey county.

Executive Committee.

Jno. M. Pugh, *President*, L. B. Wing, B. W. Carlisle,
D. L. Pope, Leo Weltz.

Officers for 1879.

B. W. Carlisle, Hooker's Station, Fairfield county	*President.*
Lucius B. Wing, Newark, Licking county	*Treasurer.*
Jas. W. Fleming, Columbus, Franklin county	*Acting Secretary.*

Members for 1879.

Jno. M. Pugh	Columbus, Franklin county.
Lucius B. Wing	Newark, Licking county.
B. W. Carlisle	Hooker's Station, Fairfield county.
D. L. Pope	Welshfield, Geauga county.
Leo Weltz	Wilmington, Clinton county.
Chas. Smith	Marion, Marion county.
Peter Murphy	Hughes Station, Butler county.
W. N. Cowden	Quaker City, Guernsey county.
R. Baker	Elyria, Lorain county.
Arvine C. Wales	Massillon, Stark county.

Executive Committee.

B. W. Carlisle, *President*, L. B. Wing, J. M. Pugh.
D. L. Pope, Leo Weltz.

LIST OF MEMBERS

OF THE

OHIO STATE BOARD OF AGRICULTURE

FROM THE FIRST STATE FAIR TO THE YEAR 1878.

[Members are elected to serve two years. The Board consists of ten members—the term of service of five expires annually.*]

Name.	Years of service inclusive.	Post-office.
M. L. Sullivant	1850–53	Columbus.
S. Medary†	1850–53	Columbus.
M. B. Bateham	1850	Painesville.
D. Lapham†	1850	Cincinnati.
F. R. Elliott	1850–51	New York.
J. T. Pugsley	1850–51	Convenience.
Arthur Watts†	1850–52	Chillicothe.
J. M. Edwards	1850–52	Canfield.
C. Springer†	1850–52	Meadow Grove.
J. G. Gest	1850–54	Xenia.
S. Halloway	1851	St. Clairsville.
Allen Trimble†	1850–51	Hillsborough.
William Case†	1852–53	Cleveland.
Philo Adams †	1852–53	Huron.
R. W. Musgrave †	1852–57	Sulphur Springs.
R. W. Steele	1853–56	Dayton.
William H. Ladd	1853–56	Brooklyn, N. Y.
D. McIntosh	1853–54	Shalersville.
J. T. Worthington	1853–56	Chillicothe.
Joseph Sullivant	1854–55	Columbus.
John K. Greene	1854–57	Cincinnati.
James L. Cox	1854–55	Zanesville.
B. Stedman	1854–57	Washington, D. C.
Alexander Waddle	1855–60	South Charleston.
Abel Krum	1855–58	Cherry Valley.
Lucien Buttles	1856–59	Columbus.
G. W. Barker†	1856–57	Marietta.
John M. Millikin	1857–62	Hamilton.
Luther Smith	1857–58	West Liberty.
Thomas S. Webb	1857–58	Massillon.
Norton S. Townshend	1858–63	Avon.
L. Q. Rawson	1858–59	Fremont.
James M. Trimble †	1858–61	Hillsborough.
John Reber	1858–61	Lancaster.
D. E. Gardner †	1859–64	Toledo.
William DeWitt †	1859–64	Cleveland.
C. W. Potwin	1859–62	Zanesville.
T. C. Jones	1860–67	Delaware.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Name.	Years of service inclusive.	Post-office.
Henry B. Perkins*	1860–63	Warren.
David Taylor	1861–66	Columbus.
Jacob Egbert †	1862–63	Lebanon.
Nelson J. Turney	1862–69	Circleville.
D. McMillan †	1863–70	Xenia.
W. R. Putnam	1863–64	Marietta.
William F. Greer †	1864–67	Painesville.
James Fullington	1864–69	Irwin Station.
William B. McClung‡	1864–71	Troy.
James W. Ross	1865–70	Perrysburg.
R. R. Donnelly †	1865–68	Wooster,
James Buckingham	1865–72	Zanesville.
J. Park Alexander	1867–70	Akron.
Norton S. Townshend ‡	1868–69	Avon.
William Lang	1868–71	Tiffin.
D. C. Richmond	1869–74	Sandusky.
R. P. Cannon	1870–75	Aurora.
James B. Jamison	1870–77	Cadiz.
L. G. Delano	1870–75	Chillicothe.
L. B. Sprague	1871–76	Springfield.
Simpson Harmount	1871–76	New Philadelphia.
John A. Warder	1871–76	Cleves.
W. S. Hickox	1872–73	Mansfield.
B. W. Carlisle	1872	Hooker's Station.
Justus C. Stevens	1873–74	Kenton.
John M. Pugh	1874	Columbus.
L. B. Wing	1875	Newark.
Russell C. Thompson †	1875–76	Sylvania.
Leo Weltz	1876	Wilmington.
D. L. Pope	1876	Welshfield.
Chas. Smith	1877	Marion.
E. T. Stickney	1877–78	Republic.
A. E. Stone	1877–78	Gallipolis.
Peter Murphy	1877	Hughes' station.
W. N. Cowden	1878	Quaker City.
R. Baker	1879	Elyria.
Arvine C. Wales	1879	Massillon.

* The old members were re-elected in 1866—no change in the Board.
† Deceased.
‡ Removed to Columbus.

A TABLE SHOWING THE PLACE AND RECEIPTS OF EVERY FAIR HELD BY THE STATE BOARD OF AGRICULTURE; ALSO, A LIST OF THE OFFICERS OF EACH YEAR OR FAIR.

Year.	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1850	M. L. Sullivant	Samuel Medary *	M. B. Bateham	Cincinnati	$8,036 18
1851	same	same	W. W. Mather *	Columbus	8,204 09
1852	Arthur Watts*	same	same	Cleveland	13,360 00
1853	Samuel Medary *	M. L. Sullivant	George Sprague	Dayton	13,996 37
1854	R. W. Musgrave *	Joseph Sullivant	same	Newark	8,824 58
1855	J. T. Worthington	same	same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles	same	Cleveland	16,684 20
1857	Alexander Waddle	same	John H. Klippart*	Cincinnati	17,530 75
1858	John M. Millikin	same	same	Sandusky	9,997 70
1859	N. S. Townshend	same	same	Zanesville	8,958 82
1860	Alexander Waddle	Charles W. Potwin	same	Dayton	11,993 50
1861	Darwin E. Gardner*	same	same	"	8,036 18
1862	Thomas C. Jones	David Taylor	same	Cleveland	11,260 64
1863	N. S. Townshend	same	same	"	11,142 00
1864	Nelson J. Turney	same	same	Columbus	12,620 54
1865	same	same	same	"	10,658 65
1866	William B. McClung	same	same	Dayton	14,035 80
1867	Daniel McMillan*	James Buckingham	same	"	18,092 98
1868	James Fullington	same	same	Toledo	15,606 25
1869	same	same	same	"	19,606 50
1870	James W. Ross	J. Park Alexander	same	Springfield	18,252 85
1871	William Lang	James Buckingham	same	"	16,460 25
1872	James Buckingham	Simpson Harmount	same	Mansfield	19,149 45
1873	Lincoln G. Delano	same	same	"	22,517 50
1874	same	same	same	Columbus	27,674 79
1875	R. P. Cannon	same	same	"	20,539 30
1876	S. Harmount †	John M. Pugh	same	"	11,909 61
1877	J. B. Jamison	same	same	"	21,151 21
1878	John M. Pugh	L. B. Wing	same	"	11,979 50
1879	B. W. Carlisle	same	J. W. Fleming, Acting	"	....

* Deceased.

† J. B. Jamison, acting President.

TRANSACTIONS

OF THE

OHIO STATE BOARD OF AGRICULTURE

FOR THE YEAR 1878.

STATE AGRICULTURAL ROOMS,
THURSDAY, *January* 10, 1878.

John M. Pugh, of Columbus; L. B. Wing, Newark; B. W. Carlisle, Hookers' Station; D. L. Pope, Welshfield; Leo Weltz, Wilmington; Chas. Smith, Marion; Peter Murphy, Hughes' Station; E. T. Stickney, Republic; E. A. Stone, Gallipolis; and W. N. Cowden, of Quaker City, of the new Board, met and organized for the year, by electing:

JOHN M. PUGH	*President.*
L. B. WING	*Treasurer.*
JOHN H. KLIPPART	*Secretary.*

The President appointed D. L. Pope, Leo Weltz, L. B. Wing, and B. W. Carlisle as the Executive Committee for the year.

On motion, agreed that the Ohio State Fair for 1878 be held on Monday, Tuesday, Wednesday, Thursday, and Friday, September 9th, 10th, 11th, 12th, and 13th.

Adjourned to meet at the call of the President.

STATE AGRICULTURAL ROOMS,
March 5, 1878.

Members all present.

Agreed that the different departments be in charge of the following members of the Board:

D. L. POPE, Welshfield	Horses.
E. T. STICKNEY, Republic	Cattle and Farm Products.
B. W. CARLISLE, Hooker's Station	Swine and Poultry.
E. A. STONE, Gallipolis	Sheep.
CHAS. SMITH, Marion	Machinery, Implements, etc.
PETER MURPHY, Hughes' Station	Mechanics and Manufacturers' Products.
W. N. COWDEN, Quaker City	Textile and Domestic Manufactures.
LEO WELTZ, Wilmington	Horticulture and Fine Arts.

The members in charge appointed the following superintendents in the different departments:

L. L. **Pope**, Chagrin Falls, Cuyahoga county, **Frank Dayton**, Madison, Lake county,	Horses.
W. B. **McPherson**, Xenia	Cattle.
Upton C. Deardorf, Canal Dover	Sheep.
Abraham Flick, Pickerington	Swine.
George W. See, Lancaster	Poultry.
Major S. N. Titus, Marion, **Jas. M. Thompson**, Toledo,	Machinery.
Chas. E. Smith, Marion, **Col. Parks**, Columbus,	Manufactures and Mechanics.
Major L. P. Coman, Hanover, J. W. **Stewart**, Quaker City, **Miss Josie Klippart**, Columbus,	Textile Fabrics, etc.
Harvey Gates, Newark	Farm Products.
S. H. **Matheuman**, Xenia, **Fedor Weltz**, Wilmington,	Flowers.
Samuel Irons, Lebanon, **Tedor Weltz**, Wilmington,	Fruits.
N. A. **Sims**, Columbus, **Jas. Webster**, Sandusky,	Fine Arts.

On motion, proceeded to revise the premium list.

Agreed, That special premiums be offered for essays, etc., as follows: The essays to be sent to the Secretary, at Columbus, on or before the 1st of January, 1879, and the awards to be made during the month of January.

Drainage.—For the best accepted essay on thorough under-draining, based on actual experience, giving an account of the products of the land before and after drainage, together with the mode and cost of drainage, a premium of $25 00.

Roads.—For the best accepted essay on county road-making, based on actual experience, the different soils and surroundings of the road to be considered, a premium of $25.00.

Farms.—For the best accepted detailed report of the best and most profitably managed farm, stating the number of acres in each crop and the method of management, a premium of $25.00.

Rat tails.—To the county exhibiting the greatest number, but in no case less than ten thousand (10,000) tails of rats killed within the county since January, 1878; the tails to be put up in bundles of one hundred tails in each bundle, and to be exhibited at the State Fair of 1878, a premium of $25.00.

Ordered, That under the head of entry book 88 a premium of $25.00 be offered for the best collection and greatest variety of insects; the collection must not have been previously exhibited, and shall be properly named and classified as destructive or beneficial.

Ordered, That under the same head a premium of $25.00 be offered for the best collection and greatest variety of Ohio birds, prepared, and not previously exhibited, the collection to be properly named and classified as follows: Insectiverous, gramniverous, and omniverous.

The Secretary submitted the following, which was accepted:

"For the purpose of encouraging the culture and love of flowers, I authorize the officers of every State and Territorial agricultural society in the United States (and where there are two prominent societies, both), and the Province of Canada, to offer, in my behalf, the following premiums:

For the best collection of cut flowers	**$20 00**
Second best	**10 00**
Third best	**5 00**
Fourth best	**Floral chromo**

"The offer is made to amateurs only, and the flowers to be exhibited at their regular annual fairs. The awards to be made by the regular judges, or by any committee appointed for the purpose. When only one collection is exhibited, the judges may award the first, or any other premium, according to merit; but the exhibition must be a creditable one, and if not so, in the opinion of the judges, no premium to be awarded. The flowers not to be made up in bouquets, but exhibited separate and named. The object being to award the premiums to the flowers, and not for the tasteful arrangement. Also,

For the best ornamental floral work (either bouquet or floral ornament, $5.00.

"I shall not consider the offer accepted by any society, unless published in the regular premium list, so that all may have an opportunity to compete. The officers of societies will please to see that disinterested and competent judges are appointed.

"I also authorize the officers of every county society in America to offer one of my floral chromos for best exhibition of cut flowers. Now, let us have some grand exhibitions of flowers."

JAMES VICK.

Agreed, **That the premium for essay on the "Deterioration of Soils" in Ohio be awarded to Major J. M. Millikin, of Hamilton, Ohio, and M. B. Bateham, of Painesville, Ohio.**

Ordered, **That the Secretary invite proposals for printing premium lists, posters, etc., for the ensuing State Fair.**

Agreed, **That when presented, the President and Secretary shall examine the proposals for printing, and award the contract as, in their judgment, is for the best interests of the Board.**

Adjourned to meet at the call of the President.

ROOMS OF THE STATE BOARD OF AGRICULTURE,
COLUMBUS, *Friday, May* 24, 1878.

Members of Executive Committee all present for the purpose of arranging for the sale of privileges, etc.

Agreed, **That the usual cold lunch stands be sold to Messrs. Gumble & Wiatt, as per their proposition submitted, the Board reserving the right to sell other stands not conflicting with their business.**

The Secretary submitted propositions for other privileges, and was ordered to let to the highest responsible bidders.

An appraisement was made on privileges for which there were no propositions submitted, and the President and Secretary were authorized to dispose of them at appraised value.

Ordered, That the minor privileges be placed under the control of the Treasurer.

Adjourned to meet at the call of the President.

AGRICULTURAL ROOMS, *August* 1, 1878.

Members all present, in pursuance to the call of the President.

On motion, proceeded to the nomination of awarding committees for the ensuing fair.

Agreed, That for the live stock departments, committees shall be appointed who shall receive compensation for their services, and that one member of each of the live stock committees shall act as reporter and write up for publication the interests of his department.

For the live stock departments the following appointments were agreed upon, and compensation fixed at $20 for committeemen and $30 for reporter:

Horses.—T. H. Bagley, Tiffin; Jas. Campbell, Gallipolis; Walter Morrison, Columbus; L. G. Delano, Kinnikinnick. The last named to act as reporter.

Cattle.—Jas. Fullington, Irwin Station; R. Baker, Elyria; Jno. Scott, Middletown; D. S. King, Wilmington; Peter Hitchcock, Burton. Mr. Baker to act as reporter.

Sheep.—Andrew McFarland, New Athens; J. C. Gist, Independence; Thos. Chapman, Navarre; Thos. Reber, Upper Sandusky; Geo. Stearns, Republic. Andrew McFarland to act as reporter.

Swine.—Luke Bradley, Hamilton; Thos. Young, Marion; Chas. H. McCormick, Gallipolis; Senator Benson, Mt. Gilead; Major J. M. Millikin, Hamilton. The last named to act as reporter.

The following nominations were made for the other departments:

Poultry.—Norman Julian, Circleville; O. P. Sharpless, Marion; Chas. Woods, Newark; Dr. Beeler, Hamilton; O. P. Buckingham, Remingham.

Machinery, Engines, etc.—Henry Barnhart, Marion; Dr. Karshner, Republic; B. T. Enos, Gallipolis; A. T. Barnes, Toledo; Geo. Lutz, Lancaster; Wm. Powell, Prospect.

Shop Machinery.—Thos. J. Young, Bryan; C. C. Park, Tiffin; Jno. S. Snyder, Lancaster; David Miller, Batesville; J. M. Richardson, Wilmington.

Hay and Harvesting Machines and Tools.—T. B. McMullen, Bellefontaine; Geo. Nelson, Delaware; James Zaner, Louisville Cross Roads; C. A. Howe, Milford; Jas. Campbell, Gallipolis.

Agricultural Machines (First Division).—Wm. M. Dunlap, Delaware; J. T. Labold, Attica; Moses H. Hensinger, Republic; Isaac Carnes, Carroll; Jno. Kerns, Gallipolis; Richard Thew, Caledonia.

Agricultural Machines (Second Division) —Jesse Kirk, Wilmington; E. Canfield, Woods; Baxter Dairs, Prospect; H. C. Dawson, Dodsonville.

Drills and Cultivators.—B. Fullon, Wilmington; E. B. Monnette, Bucyrus; John Hammitt, Carthage; Felix Reber, Marion; A. S. Beecher, Mantau.

Plows.—John Robinson, West Beaver; R. N. Taylor, Upper Sandusky; Henry Alspach, Hooker's Station; Thomas Hazard, Wilmington; Christ. Wiest, Little Sandusky.

Worked Metals—G. M. Flenner, Hamilton; Samuel Whiley, Lancaster; John M. Lane, Zanesville; Allen Levering, Mt. Gilead; A. Pontius, Canton.

Stoves, Castings, etc.—W. H. Hills, Cincinnati; H. J. Walls, Columbus; F. R. Sater, Marion; Mrs. W. L. Hamilton, Republic; Mrs. T. W. Jones, Columbus.

Vehicles—J. T. Grey, Riley, Butler Co.; William H. Shaff, Wilmington; T. D. Petty, Barnesville; Mr. Riddle, Ravenna; James Vanden, Gallipolis; Watt Watkins, Prospect.

Household Implements.—David Furnas, Waynesville; Herman Groschner, Napoleon; Jno. Haley, Kenton; Mrs. M. Vandenbark, Westerville; Mrs. Wm. Harrison, Columbus; William Smith, Richwood.

Glass, Crockery, etc.—W. B. Law, Cadiz; Mr. Love, Mt. Vernon; P. T. Turpin, Linwood; William Parr, Newark; Samuel E. Bay, Logan.

Minerals and Chemicals.—J. D. Poston, Logan; B. B. Sheffield, Floodwood; Elsa Scott, Cambridge; General Thomas, Columbus; J. S. Elliott, Coshocton.

Household Fabrics.—I. M. Riley, St. Clairsville; Mrs. Ervin Moore, Canal Winchester; Mrs. Andrew Sayler, Carroll; Mrs. James Fullington, Irwin Station; Mrs. David Furnas, Waynesville.

Needle Work.—S. Harmount, New Philadelphia; Miss Gussie Strilletz, Marion; Mrs. Van Cleaf, Circleville; Mrs. M. Godman, Columbus; Miss Ella B. Rose, Quaker City; Mrs. T. H. Hodder, Columbus.

Braiding and Embroidery.—Josiah Laughlin, Cambridge; Mrs. H. H. Kimball, Columbus; Mrs. E. T. Jones, Columbus; Mrs. E. K. Stewart, Columbus; Mrs. L. L. Pope, Chagrin Falls.

Crochet and other Ornamental Work.—W. C. Hayward, Gallipolis; Miss Caddie Conrad, Columbus; Mrs. Amos Layman, Columbus; Mrs. A. B. Gillett, Carroll; Mrs. Charles Wetmore, Columbus.

Cabinet Ware.—David Taylor, Jr., Columbus; A. Humbarger, Lancaster; P. B. Osborn, Wilmington; Mrs. Rodney Foos, Columbus; Mrs. L. Backus, Columbus.

Factory Goods.—J. Mooney, Port Clinton; Asa Shuler, Hamilton; J. T. Halliday, Gallipolis; Mrs. W. B. Brooks, Columbus; Mrs. J. C. Stevens, Kenton.

Stationers' Ware.—J. C. Tuthill, Lancaster; J. Hildebrand, Wilmington; S. R. Dumble, Marion; Hon. Lewis Green, Logan; L. I. Pope, Chagrin Falls.

Merchants and Dealers' Class.—C. Hills, Delaware; Joseph H. Close, St. Clairsville; S. Alex. Leckey, Sidney; Mrs. W. Y. Miles, Columbus; Mrs. R. F. Burt, Columbus.

Boots, Shoes, and Leather Manufactures.—Henry Loresh, Wilmington; Hon. W. H. Stokes, Waynesville; Allen Beech, Mt. Vernon; J. C. Stevens, Kenton; Jonathan Rose, Quaker City.

Flour, Grain, and Seeds.—Isaac Stanley, Athens; R P. Cannon, Aurora; Ervin Moore, Canal Winchester; James Davis, Wilmington; Morgan D. Hayes, Bloomingsburg.

Cheese.—W. B. Strait, Hudson; C. B. Chamberlin, Medina; S. S. Warner, Wellington; C. R. Harmon, Aurora; D. W. Brooks, Columbus.

Butter, Bread, etc.—Andrew Bauman, Lancaster; Dr J. B. Williams, Summerfield; Mrs. T. F. Joy, Delaware; Miss Ellie Morrow, Marion; Miss Lizzie Sutton, Mt. Washington.

Honey, Preserves, Pickles, etc.—T. F. Joy, Delaware; Mrs. F. P. Vergon, Delaware; Mrs. Reed Golden, Athens; Mrs. Sidney Moore, Delaware; Miss Mary Clark, Belle Center.

Potatoes and Vegetables.—Sol. Bader, Basil; Ed. McGary, Urbana; J. S. Leaming, Wilmington; Samuel Coobly, Mt. Washington.

Summer and Fall Apples—Dr. Hurst, Williamsport; Geo. H. Miller, Norwich; Frank Ford, Ravenna; Harvey Kellogg, Toledo; G. S. Innis, Columbus.

Winter Apples.—J. J. Harrison, Painesville; J. S. Sutton, Mt. Washington; R. J. Black, Bremen; F. M. Black, Darbyville; H. M. Chapman, Cleveland.

Plate Apples.—S. R. Moore, West Zanesville; Francis Granger, West Toledo; Jas. W. Ross, Perrysburg; S. H. Hurst, Chillicothe; M. E. Dreesbach, Circleville.

Peaches, Quinces, and Plums.—M. B. Bateham, Painesville; Lyman White, Tiffin; J. T. Busby, Lancaster; W. K. Tipton, Barnesville; Asa Toberin, Defiance.

Pears.—Henry Gulick, Bevis; Geo. H. Coulson, Bucks; S. B. Marshall, Cleveland; Chas. Carpenter, Kelley's Island; U. Keenan, Quaker City.

County Fruits.—Dr. J. A. Warder, Cleves; Dr. S. S. Boyd, Wilmington; F. R. Palmer, Mansfield; N. Ohmer, Dayton; Jno. A. Fetters, Lancaster.

Grapes.—G. F. Newton, Millersburg; T. B. Fisher, Marion; Hon. Wm. Bundy, Barnesville; Addison Kelley, Kelley's Island; Wm. H. Mills, Sandusky.

Native Wines.—Theodore Mithoff, Lancaster; Wm. Van Heyde, Lancaster; Col. F. F. Remple, Logan.

Plants and Flowers (Professional list).—Frank Pentland, Lockland; S. S. Jackson, Cincinnati; Wm. McKellar, Chillicothe; J. W. Penney, Newark; Aug. Sunderbrook, Corryville.

Plants and Flowers (Amateur list).—Frank McGregor, Springfield; J. L. Stelzig, Columbus; Mrs. Col. Blount, Columbus; Jno. R. Hall, Quaker City; Mrs. D. W. Brooks, Columbus.

Drawings, Paintings, etc.—Reese G. Richards, Steubenville; Lindsey Kelly, Ironton; H. W. Curtiss, Chagrin Falls; Chas. Martin, Lancaster; Jas. W. Owen, Newark.

Sculpture.—Hon. Mr. Thorpe; John Kirkpatrick, Cambridge; Sam'l McBride, Zanesville; Jas. Cox, Zanesville; Dr. J. M. Wheaton, Columbus.

Philosophical Instruments.—Dr. Jas. Lytle, Logan; Dr. Toland Jones, London; Dr. P. E. Blesch, Columbus; Dr. F. M. Black, Darbyville.

Musical Instruments.—The leaders of the bands furnishing music during the fair.

Agreed, that the Board contract with E. K. Stewart in the sum of $20 for sprinkling the entire fair grounds and Broad street during the fair.

Messrs. Renick and Fuson, of the Franklin County Board, agreed to make any and all needed repairs on the fair grounds, but not to put up any new structures.

Ordered, That the Secretary invite proposals for furnishing the necessary amount of hay and straw to be used during the fair.

On motion of Mr. Carlisle, it was agreed that Mr. Coman should make such improvements in Domestic Hall as he deemed necessary, provided such improvements shall not incur an expense to exceed $20.

On motion, adjourned to meet at call of the President.

State Agricultural Rooms,
Columbus, *September* 4, 1878.

Executive Committee all present except Mr. Pope.

The following communication was ordered:

COLUMBUS, *September* 4, 1878.

His Excellency Governor R. M. Bishop:

DEAR SIR: The undersigned respectfully invite you, with your Staff and Guard, to attend the Ohio State Fair, at Columbus, at such time during its progress as will suit your convenience.

Respectfully,

J. M. PUGH,
B. W. CARLISLE,
L. B. WING,
Executive Committee Ohio State Board of Agriculture.

The invitation was accepted.

COLUMBUS, *September* 4, 1878.

MESSRS. J. M. PUGH, B. W. CARLISLE, AND L. B. WING, *Executive Committee, etc.:*

GENTLEMEN: Your polite invitation to name some day when it will suit my convenience to attend the State Fair at Columbus is received, and in reply beg leave to say it will afford me great pleasure to be present with you on so interesting an occasion, and hereby name Wednesday, September 11, as the earliest day it will be possible for me to attend.

I will be pleased to refer your communication to my staff and the Governor's Guard.

Very respectfully yours, etc.,

R. M. BISHOP.

Capt. Phisterer replied to the communication received from the Governor, accepting, on behalf of the Guard, stating the company would give a short drill, followed by dress parade, in accordance with the wishes of the members of the committee.

The Secretary announced the following communication:

OFFICE OF THE BOARD OF POLICE COMMISSIONERS,
COLUMBUS, *September* 3, 1878.

J. H. KLIPPART, ESQ., *Secretary State Board of Agriculture:*

DEAR SIR: The Board of Police Commissioners last evening petitioned the City Council for means to supply the special police protection required during the State Fair, which petition was not granted.

The Police Commissioners being without means, of course will be unable to police the fair, unless means are supplied by your Board.

Very respectfully,

CHAS. G. LORD, *Secretary.*

On motion,

Agreed, That in order to give the Board time for consultation, the matter of policing the grounds be deferred for the present.

The Secretary presented an invitation to the State Board of Agriculture and the Franklin County Board to visit the Ross County Fair, at Chillicothe.

Adjourned to meet to-morrow, September 5.

Executive Committee, in consultation with Mr. Luther Donaldson and other citizens of Columbus, completed arrangements for policing the grounds, Mr. Donaldson having taken charge and raised sufficient money to defray the expenses of the same.

The Secretary was instructed to address a communication to the Mayor of Columbus, asking that he invest Capt. Alexis Keeler with the proper authority for discharging the duties of chief of fair ground police.

Agreed, That the following bands be employed to furnish music during the progress of the fair: Marion band, for Wednesday, Thursday, and Friday; Lancaster, for Tuesday; Tiffin, for Friday; Circleville, for Thursday; Hemmersbach's, for Thursday and Friday; Xenia, for Wednesday.

On motion, adjourned.

STATE FAIR GROUNDS, *Friday, September* 13, 1878.

Members all present for the purpose of considering a request from quite a number of prominent citizens of Columbus to continue the fair for the first three days of next week.

After due consideration the Board proposed that if citizens would raise the sum of $1,200, being $300 per day for current expenses, that it would continue the fair as requested.

T. Ewing Miller and George D. Chapman went to the city as a committee to consult with other citizens in regard to furnishing a proportion of the requisite amount necessary to continue the fair—Mr. W. Morrison and S. N. Fields a committee to canvass the grounds for a certain amount of that required—said committees to report to the Board not later than three o'clock P.M.

There being a deficiency in the amount to be raised on the grounds, Mr. Theodore Comstock supplied the deficiency.

THREE O'CLOCK P. M.

The committees reported to the Board that the necessary amount had been raised, when it was

Resolved, That the Ohio State Fair be continued until Wednesday evening, September 18.

Resolved, That the gates be closed and no visitors allowed on the grounds during Sunday, September 15.

Agreed, That the following extra premiums be offered:

IN FLORAL HALL.

Commercial List, to be examined Monday, September 16, *at* 1 *o'clock P.M.*

Best collection of cut flowers	$10
Second best collection of cut flowers	6

Third best collection of cut flowers	$4
Best collection of cut roses	5
Second best collection of cut roses	3
Best collection of cut dahlias	5
Second best collection of cut dahlias	3
Best collection of cut verbenas	5
Second best collection of cut verbenas	3
Best collection of cut geraniums	5
Second best collection of cut geraniums	3
Best display of button-hole bouquets	2
Second best display of button-hole bouquets	1
Best pair hand bouquets	5
Second best pair hand bouquets	3

Amateur List, to be examined Monday, September 16, *at* 1 *o'clock P.M.*

Best collection of cut flowers	$8
Second best collection of cut flowers	5
Third best collection of cut flowers	3
Best collection of cut verbenas	3
Second best collection of cut verbenas	2
Best collection of cut petunias	3
Second best collection of cut petunias	2
Best collection of cut balsams	3
Second best collection of cut balsams	2
Best pair hand bouquets	3
Second best pair hand bouquets	1
Best pair table bouquets (15 inches)	3
Second best pair table bouquets (15 inches)	1
Best collection of cut geraniums	2
Second best collection of cut geraniums	1

Commercial List, to be examined on Tuesday, September 17, *at* 1 *o'clock P.M.*

Best collection of floral designs	$25
Second best collection of floral designs	15
Best table design cut flowers	15
Second best table design cut flowers	10

Amateur List, to be examined Tuesday, September 17, *at* 1 *o'clock P.M.*

Best floral designs, suitable for dinner or drawing-room table	$7
Second best floral designs, suitable for dinner or drawing-room table	5
Third best floral designs, suitable for dinner or drawing-room table	3

IN THE SPEED RING.

2:30 *Class—Purse of* $180.

1st	premium	$100
2d	"	60
3d	"	20

2:40 *Class—Purse of* $150.

1st premium	$75
2d "	50
3d "	25

Runners.

Best and fastest running horse, mare, or gelding	$60
Second best and fastest running horse, mare, or gelding	30
Third best and fastest running horse, mare, or gelding	10

Three Minute Class—Purse of $150.

1st premium	$75
2d "	50
3d "	25

Trotters—Purse of $110.

1st premium	$50
2d "	30
3d "	20
4th "	10

The Secretary was ordered to telegraph the extension of the Fair, to the cities and towns along the lines of railroad, and to secure from the railroad companies an extension of their agreements to carry freights free, and passengers at excursion rates.

Mr. Jas. W. Fleming was ordered to take charge of the programme advertising, and to issue such matter as in his judgment was necessary to judiciously advertise the extension of the Fair.

On motion, adjourned.

TOLEDO, *September* 19, 1878.

At a special meeting of the members of the Ohio State Board of Agriculture, held on the Tri-State Fair Grounds, it was

Resolved, That the thanks of the Ohio State Board of Agriculture be tendered to the officers and members of the Tri-State Fair for their kind invitation, very cordial reception, and generous entertainment at their second annual fair; and further, they cheerfully congratulate them for the very excellent attendance with which they are favored, and for their very successful exhibition of the leading articles of productive industry of the three States of Ohio, Indiana, and Michigan.

By order of the Board.

JNO. M. PUGH, *President.*
B. W. CARLISLE,
D. L. POPE,
JNO. H. KLIPPART, *Secretary.*

STATE AGRICULTURAL ROOMS,
COLUMBUS, *October* 3, 1878.

Present—The President, Messrs. Stickney, Wing, Pope, Carlisle, Smith, and Cowden. Absent—Messrs. Murphy, Stone, and Weltz.

The Secretary presented a statement of the financial condition of the Board, from which it appeared the funds were about exhausted, when it was

Agreed, That, for the present, no further payment of premiums be made.

Resolved, That the Executive Committee shall—in case there are no funds in the treasury—at its next meeting, consider the propriety of issuing certificates of indebtedness to parties applying for premiums awarded at the late Fair.

On motion, the Board proceeded to examine the accounts on file.

Mr. Pope was appointed a committee of one, to ascertain the amount of hay and straw used during the Fair, and to report the amount to the Secretary.

On motion, adjourned to meet at the call of the President.

STATE AGRICULTURAL ROOMS,
Saturday, October 26, 1878.

Members present in accordance with the call of President J. M. Pugh, announcing the death of Secretary Jno. H. Klippart.

The President, agreeable to the wish of the family of our deceased Secretary, stated the Board would take charge of the funeral ceremonies, and proceeeded to make the necessary arrangements.

A committee was appointed to draft resolutions expressive of the life, character, and public services of the late Secretary Klippart, said committee being instructed to report on Sunday, November 27, when there would be a number of the ex-members of the Board present.

Adjourned.

SUNDAY, *October* 27, 1878.

Joint meeting of members and ex-members of the Board.

Judge T. C. Jones, as chairman of the committee, appointed at a previous meeting to draft resolutions, after a few very appropriate remarks, presented the following preamble and resolutions, which were adopted:

The sudden and unexpected death of John H. Klippart will be regarded by all who are connected with the agricultural interest of the country, as a most severe and irreparable loss. To us who have been more intimately associated with Mr. Klippart in the great work of his life—some of us for a period of nearly a quarter of a century—this is a most serious affliction. We know how constantly and unremittingly his energies have been devoted to this work—how generously, and without thought of pecuniary gain, his life has been given to the promotion of the welfare of the agricultural population of the country. We look about in vain for a man of the same capacity, and the same general knowledge of the sciences connected with agriculture in their practical application that will devote himself to the work, with the same patient and unselfish assiduity, to fill his place; and as we are here assembled to participate in these last sad ceremonies, we add to these brief expressions of our appreciation of the value of the public services of our deceased friend, our testimony to the many good and amiable traits of his character as developed in social and official life.

In our visits to the Capitol of the State, as we made our accustomed calls at the department of agriculture, we were ever met with his kindly greetings, with a readiness to serve us in any possible way—and these kindly offices were shared by people of all classes that had business at these rooms—the poor and the humble, as well as men of wealth and position. His enthusiasm and hope rendered him always confident and persevering under the most discouraging circumstances, and inspired hope and enthusiasm in others. Whether at the office, the annual exhibition of the Board, or in his own happy household, we have ever found him the same genial, benevolent and kind-hearted and companionable friend; and,

Resolved, That we offer the family of the deceased, who have lost a kind husband and father, our sincere condolence in this sad hour, and that we commend them to that One who is the widow's stay and the orphan's help.

Resolved, That as a further testimony of our profound respect for the memory of the deceased, the members and ex-members of the Ohio State Board of Agriculture attend his funeral in a body, and, also, that the rooms of the State Board be draped in mourning for thirty days.

Resolved, That a copy of the above be spread upon our minutes, and a copy also furnished to the family of the deceased and to the press of the State.

T. C. JONES,
J. M. PUGH,
JAS. B. JAMISON,
W. N. COWDEN,
B. W. CARLISLE,
Committee.

The Secretary of a meeting of the State officers, Supreme Court and Commission, reported the adoption of the following:

WHEREAS, It has pleased Almighty God to call from our midst Hon. John H. Klippart, late Secretary of the State Board of Agriculture; and whereas, in this afflictive dispensation of Providence, society has lost one of its most valued citizens, the State a useful and upright officer, his friends a genial and esteemed companion, his family a beloved husband and father; and whereas, in our personal and official relations, we have ever found him a genial, cultured, and refined associate; therefore,

Resolved, That we tender to his family our warmest sympathies in this, their heartfelt affliction.

Resolved, That we attend his funeral in a body.

Resolved, That these resolutions be printed in the Cincinnati and Columbus papers, and that a copy be forwarded by the secretary of this meeting to the family of the deceased.

AGRICULTURAL ROOMS,
Monday Morning, *October* 28, 1878.

On motion of Mr. Carlisle, it was

Agreed, That Jas. W. Fleming be Acting Secretary of the Board until the annual meeting in January.

The Acting Secretary was instructed to complete the work of the department for the year, and to make the necessary preparations for the annual agricultural convention.

Adjourned.

STATE AGRICULTURAL ROOMS,
COLUMBUS, *November* 15, 1878.

Pursuant to the call of the President, the Executive Committee met to prepare for the closing up of the year's proceedings.

Members of committee all present except Mr. Pope.

The bills on file and not paid were examined, found correct, and approved, but ordered to await the full meeting of the Board for payment.

Ordered, That Treasurer Wing, assisted by the Acting Secretary, examine the accounts of the late Secretary against the Board, and make settlement as they find them rendered.

Agreed, That certificates of indebtedness be issued to parties applying for premiums at the last Fair, said certificates to be as follows:

ROOMS OF THE OHIO STATE BOARD OF AGRICULTURE,
COLUMBUS, ——————, 187—.

This is to certify that —————————— was awarded premiums amounting to the sum of —————— dollars at the Ohio State Fair held at Columbus, September, 1878, which amount will be paid as soon as there are funds in the treasury.

——————————,
Acting Secretary.

☞ A duplicate copy of this certificate is kept on file, and as soon as there are funds in the treasury you will be notified, when you can send this certificate *through any bank* for collection.

On motion, adjourned.

STATE AGRICULTURAL ROOMS,
COLUMBUS, *Monday evening*, *January* 6, 1878.

Members present—President Pugh, Messrs. Carlisle, Smith, Weltz, Cowden, and Murphy. Absent—Messrs. Stone, Stickney, Wing, and Pope.

The President appointed Messrs. Carlisle, Weltz, and Cowden a committee to examine the accounts of the Treasurer and Acting Secretary.

Agreed, That the commended list be taken up for consideration.

Ordered, That the following be incorporated in the premium list for 1879: Trio Sumatra pheasants; folding bedstead; child's bedstead; lodge and military supplies; pneumatic middlings purifier; lawn mower; wool press and tier; hay tedder; three-horse plow; apple-parer; display of minerals; traction farm engine; adjustable buggy top; hand-carving; air-castles; display gents' furnishing goods; gent's overcoat; prepared ferns; medley pictures.

Ordered, That diplomas be awarded as follows:

Davidson & Rutlidge, for farm traction engine.
Buffalo Forge Company, for portable forge.
Thos. B. Whiley, for automatic gate.
Halm, Bellows & Butler, for parlor inlaid table.
Geo. Bobb, agent, for lot of Eureka salt.

On motion, Messrs. Murphy, Smith, and Wing were appointed a committee to examine and report on essays.

Adjourned to meet Tuesday morning at 10 o'clock.

TUESDAY MORNING, 10 o'clock.

Members all present except Messrs. Stickney and Stone.

The committee to whom was referred the accounts of the Treasurer and Acting Secretary reported as follows:

We, the undersigned committee appointed to examine the accounts of the Treasurer and Acting Secretary of the Board, would respectfully report that we have carefully examined the same, and find the books accurately and neatly kept, and that all the checks issued correspond in amount with the vouchers for the same, as required by the by-laws of the Board.

B. W. CARLISLE,
LEO WELTZ,
W. N. COWDEN,
Committee.

Recess until 2 o'cock P.M.

2 O'CLOCK P.M.

Agreed, That Mr. Poyntz, of Kentucky, be allowed the premium on milking cow "Madam Kyle," provided he present a sworn statement as to the amount of milk and butter produced in a given time.

Ordered, That the Acting Secretary communicate with J. H. Benson relative to the exhibition of flour at the late Ohio State Fair.

Agreed, That J. B. Howe be granted a Silver Medal for "Wanzer Sewing Machine" exhibited at the late Fair.

Agreed, That Leonard Crow, of Licking county, be awarded the premium of $30 for best crop of five acres barley, he having complied fully with the requirements of the Board relative to sworn statements, etc.

Adjourned to meet in convention in the Ohio Senate Chamber Wednesday, 10 o'clock A.M., January 8.

Last meeting of the Board of 1878.

Attest:

JAS. W. FLEMING,
Acting Secretary.

FINANCIAL STATEMENT.

[For approval of the following, see report of committee to examine accounts of Treasurer and acting Secretary.]

COLUMBUS, *January* 7, 1879.

JOHN M. PUGH, *President of the Ohio State Board of Agriculture:*

DEAR SIR: The following exhibit of the financial transactions and condition of the State Board of Agriculture for the year ending December, 1878, as appearing from the several accounts, I herewith respectfully submit.

JAS. W. FLEMING, *Acting Secretary.*

TOTAL RECEIPTS DURING THE YEAR.

From State appropriation	$3,000 00	
" contingent fund	233 32	
" sundries, cash	225 00	
" M. Gumble	1,000 00	
" Dill Weigand	50 00	
" State Fair receipts	9,541 75	
" Osborne	1,050 00	
" Hershiser	75 00	
" Hocking Valley tickets	37 75	
Total		$15,212 82

DISBURSEMENTS.

For bank overdraft at beginning of year	$3,580 41	
" outstanding checks of former years	198 00	
" premiums of 1878	1,303 00	
" printing and advertising	2,171 90	
" lumber and material	233 81	
" forage and refreshments	659 25	
" expenses of members of the Board	511 04	
" labor and assistance	3,437 45	
" express and freight	118 26	
" office expenses	302 35	
" postage and telegraph	220 26	
" Secretary	1,750 00	
" clerk	598 97	
" interest on overdraft	168 06	
Total		$15,252 76
From which deduct outstanding unpaid checks of present year		399 00
Showing total amount paid out by the Treasurer to be		$14,853 76
Which deducted from gross receipts as above, shows a present balance of cash in hands of Treasurer of		359 06

The liabilities of the Board are as follows:

For outstanding checks of former years	$221 95	
" 1878	399 00	
For premiums of 1878, as follows:		
On horses	1,703 50	
On cattle	1,456 00	
On sheep, swine, and poultry	1,587 00	
On machinery, etc	304 00	
On mechanics' and manufacturers' products	341 00	
On domestic fabrics, etc	754 00	
On farm products	525 00	
On fruits, flowers, and fine arts	1,171 00	
Horse premiums, extraordinary	142 50	
Flower " "	153 00	
For bills for advertising State Fair of 1878, on file and awaiting payment	361 60	
For printing Bulletin of 1878	200 00	
For miscellaneous accounts awaiting adjustment	547 65	
Total		$9,867 20
Less cash on hand		359 06
Actual liabilities		$9,508 14

PROCEEDINGS OF THE THIRTY-FOURTH ANNUAL SESSION

OF THE

OHIO STATE AGRICULTURAL CONVENTION.

SENATE CHAMBER, COLUMBUS, OHIO,
Wednesday, January 8, 1879—10 o'clock A.M.

The Convention was called to order at 10 A.M., by the President, Judge John M. Pugh, and the roll of counties called by the Secretary, James W. Fleming, representatives from sixty-eight counties being present.

Allen	**S. Sanford.**
Athens	**Isaac Stanley.**
Belmont	**J. F. Charlesworth.**
Butler	**Jas. Giffin.**
Carroll	**George H. Allen.**
Clarke	**Smith Wallace.**
Clermont	**J. O. Rapp.**
Clinton	**Leo Weltz.**
Columbiana	**John Robinson.**
Coshocton	**J. S. Elliot.**
Crawford	**E. R. Kearsley.**
Cuyahoga	**S. W. Knapp.**
Darke	**Charles Negley.**
Delaware	**George Neilson.**
Erie	**D. H. Benschoter.**
Fairfield	**R. L. Sharp.**
Fayette	**Charles Palmer.**
Franklin	**J. O'B. Renick.**
Fulton	**J. H. Bringham.**
Gallia	**Charles D. Baily.**
Geauga	**Peter Hitchcock.**
Greene	**William McPherson.**
Guernsey	**John Rose.**
Hamilton	**W. H. Hill.**
Hardin	**W. A. Kelly.**
Harrison	**John J. McFadden.**
Hocking	**Sam. E. Bay.**
Holmes	**Robert F. Gray.**
Huron	**John A. Williamson.**

Jefferson	J. T. Kithcart.
Knox	John C. Levering.
Lake	E. T. C. Aldrich.
Lawrence	L. Kelly.
Licking	William Parr.
Logan	William R. Pool.
Lorain	C. S. Mills.
Lucas	S. S. Ketchum.
Mahoning	J. H. Shields.
Marion	George Riterer.
Medina	Geo. M. Ganyard.
Meigs	J. L. Carpenter.
Mercer	D. J. Root.
Miami	W. A. R. Tenny.
Monroe	Dr. Williams.
Montgomery	Ed. Thomas.
Morgan	E. S. Fawcett.
Morrow	Minor Harrod.
Muskingum	Jno. M. Lane.
Noble	—— Dalzell.
Paulding	J. W. Fleming.
Perry	Samuel Arnold.
Pickaway	F. M. Black.
Portage	H. Y. Beebe.
Preble	J. M. Daugherty.
Putnam	C. Mack.
Ross	Jos. W. Clark.
Sandusky	La Q. Rawson.
Shelby	S. Alex. Leckey.
Stark	J. K. Neiz.
Summit	John F. Moore.
Trumbull	S. N. Edwards.
Tuscarawas	S. Harmount.
Van Wert	I. W. McElwain.
Warren	Samuel Irons.
Washington	P. Palmer.
Williams	J. P. Marsh.
Wood	E. B. Beaverstock.
Wyandot	L. B. Harris.

On motion of B. W. Carlisle, of Fairfield, the chair appointed, as

COMMITTEE ON RULES AND ORDER OF BUSINESS,

W. B. McClung, of Franklin; Simpson Harmount, of Tuscarawas; and D. L. Pope, of Geauga.

Isaac Glaze moved that the sergeant-at-arms of the Senate be requested to act as sergeant-at-arms of the Convention, which was agreed to.

THE PRESIDENT'S ANNUAL ADDRESS

Was then read by the Secretary, as follows:

Gentlemen of the Convention :

It affords me great pleasure to welcome you here to-day, not merely as the President of the State Board of Agriculture, but also as a citizen of the capital city of Ohio, and I trust that the result of your deliberations this day will be such that they will inure to the best interests of the great cause of agriculture, in which we will be moved to renewed energy and determination, so that the results of the year 1879 shall surpass those of any former year; if this can be done, our labor will not be in vain.

The year 1878 has passed away and its results are before us. It was one of the most fruitful that this country has ever enjoyed, and the agricultural products of all kinds, throughout this State especially. were in kind and quality almost unprecedented. The winter of 1877 and 1878 was admirably adapted to starting the growth and leading to an abundant supply of that staple product—wheat. The spring followed in the wake of the winter, and the two conspired to bring about the glorious results of the summer and autumn harvests. These results have brought agriculture into greater prominence than ever before, and the people have at last learned that this country is not only destined to be in the advance in mechanical productions of all kinds, and to continue yielding its abundance of the precious metals and add to its wealth by these means alone, but that the products of agricultural labor will continue to be an important factor in the resources of the country. The science of agriculture is keeping pace with mechanics and all the arts and sciences in the onward march of civilization.

The science of agriculture has for its object the enabling man the better to obtain the means of sustaining life, without which means all knowledge of nature and art would be of no avail; so that the science of agriculture is the objective point of all other sciences. As, by means of the pursuit of agriculture, history tells us man first obtained the means of life, so by the same means he continues to live and move. Agriculture gains by every new discovery in science and every new invention in the arts. Mechanics and agriculture go hand in hand, each assisting the other, so that greater results in each are thus obtained. The principles of mechanics, gleaned from the truths of science, and put to the test by mechanical inventions, all conspire to make the pursuit of agriculture less and less difficult, and its results the more easily obtained. The sciences of chemistry and physics, too, aside from their connection with mechanics, are very important factors in a thorough knowledge of the science of agriculture. The former, for example, imparts to us those truths by which we are enabled to know the elements which comprise the different agricultural products, and from that knowledge to conclude what fertilizer is best adapted to the growth of any particular vegetable product. By means of chemistry we are also enabled to analyze and classify all agricultural products, and from that analysis and classification systematize the pursuits of their cultivation.

Need I tell you of the important assistance which is lent to our science by the other sciences—by geology, giving us accurate knowledge of the composition and qualities of soils, and by meteorology, which gives us almost positive information as to the weather which is near at hand? This latter branch of knowledge is rapidly taking rank with the most accurate of sciences, and when that accuracy shall have been tested and demonstrated by the successes of many years, I predict that the results of the labors of our signal service will be of the highest use to the farmer, enabling him to forestall the action of the natural elements and garner the fruits of his labor with greater and greater success with each succeeding year.

Many valuable results have been attained in agriculture with the aid of the natural sciences, and who can tell what new discoveries in these fields may do for our science? Can any one tell what ratio the labor required at the present day to produce a given amount of a certain agricultural product will bear to the labor required years hence to produce the same amount of that article?

We know the results obtained in the years that have gone. They are matters of history, but the uncertainty of the future is before us, but whatever will aid in bringing about glorious results in agriculture should be fostered by us with a benevolent hand, and as the sciences, and arts and mechanics have aided agriculture so materially in the past, every honest effort in the future for the advancement of our race in the knowledge of those great branches of learning, should be energetically assisted by us.

There are one or two things that I desire to call your attention to, which require discussion and united action on the part of the farmers. One is the fact that at least one-tenth of all the personal property of the State escapes taxation, and the result is that farmers are obliged to pay that much more than their rightful proportion of the taxes. This ought to be remedied. No farm property can escape taxation, and all property ought to bear its equal proportion of the burdens of taxation. The other is the rate of interest on money. The capital invested in agriculture, after paying for labor and incidental expenses, does not bring an average yearly income to its owners of above three per cent. The government pays four per cent. for its capital. By the laws of this State eight per cent. is lawful interest. The result is that many enterprising farmers sell their farms for the sake of the higher rate of interest on the capital invested, and engage in some other employment.

The productive industries of the State, such as farming, mining, and manufacturing, cannot pay a high rate of interest and live; unproductive or speculative business, can and does pay a high rate of interest. The one ought to be encouraged, and the other ought to be discouraged. Nothing will tend more to increase production, and thereby increase wealth, than a moderate rate of interest on capital, and equal taxation.

We regret to say, that the State Fair of 1878 was not a success, financially, owing entirely to the great rain storm, which set in on the opening and continued without cessation throughout the entire fair. We are, however, proud to say, that so far as the exhibition was concerned, none better was ever given in the State. Every department was filled to overflowing, and that, too, with the best material the State could produce.

Take, for instance, the horse department; it may be true that there was not so many horses present, as at some former years, but that they were of a better quality, there can be no doubt. There is one thing apparent to all who attended the fair, that is, that there was a less number of what may be termed "dead-head" horses this than any former year. The same can be said as to the cattle department; it, too, was well represented, and I can safely say that it was second to none ever held in the State, so far as the quality was concerned; it is true, in this department, as in the horse department, that there may not have been so many entries as some former years, but it was more than made up in quality, which, we think, speaks well for the stock men.

Again, take the swine department, and we can do no better than to use the language of the Hon. John M. Milligan, in his report, in which he says: "In quality, as well as numbers, they have never been equaled at any exhibition of swine in Ohio." The same can be said of the sheep department; we think none better was ever shown at any State fair.

As to the halls I can hardly tell what to say about them; they were literally full to overflowing, with the finest material in the State. I shall content myself by simply remarking that, so far as the halls were concerned, no better exhibition was ever given in the State.

Unfortunately for the success of the fair, circumstances have been such that the attendance is merged into two days, and should they turn out as in 1876 and 1878, failure is inevitable; therefore, it would be well to consider the propriety of keeping the fair open for a longer time, or else to have the buildings so arranged that whether it rained or not visitors could attend in the dry.

I am reminded that the series of five years, as recommended by the Convention in this room in 1874, terminated with the State Fair of 1878. It now becomes your duty to the State Board either to decide to locate the fair permanently or not. I trust that your deliberations upon this subject will be characterized with coolness, and a careful consideration of all arguments advanced. At present we have the Northern Ohio Fair at Cleveland, the Tri-State Fair at Toledo, the Southern Ohio Fair at Dayton, and the Exposition at Cincinnati (which is destined to be a permanent affair), and neither of these cities will in all probability desire the location of the State Fair. The competition for the location is accordingly confined to a less number of cities than formerly. There are arguments which can, and probably will, be brought forward both for and against permanent location of the State Fair. It is not my duty to advise you to take either course, but will content myself with counseling you to decide upon taking that course which may be for the best interests of the agriculture of the State, and you will all have the satisfaction of having done your duty regardless of criticism. There is one more point connected with the fair which I desire to bring before the Convention, and would be pleased to hear discussed, that is the system of free passes. For one I am decidedly opposed to issuing free passes to any one. 1st. Because our experience is that the parties requiring them are abundantly able to pay the admission fee; 2d. Because many who receive them never did anything to assist agriculture in any way whatever; 3d. Because it is an imposition upon the paying public at large.

The question as to the price of admission is one of considerable importance; that is, whether it is advisable for the Board to continue to charge fifty cents, or to go back to the old price of twenty-five cents. Many are of the opinion that it would be to the interests of the fair to charge but twenty-five cents. This is a question for discussion.

The time has come when we must economize in every possible way to make the fair a success.

Now, gentlemen of the Convention, the saddest part of my duty has come. That is, to announce to you the death of your late Secretary, John H. Klippart. He died at his late residence on East Town street, in this city, on the afternoon of October 24, 1878. He expired with perfect composure, and without a groan or struggle. His distinguished services as your Secretary are indelibly connected with the history of the State Board for more than twenty years past. He was a kind husband, an indulgent father. He leaves a widow and one daughter to mourn his loss. As a companion he was social, and a good talker. His hospitable mansion, on Town street, was always open to his friends, and no guest ever parted from there without feeling happier for his visit. I shall not detain this Convention with an extended eulogy, for I learn that there are several gentlemen present who will make extended remarks in regard to the deceased.

In conclusion, I now return to one and all my sincere thanks for kind treatment in the past.

The chair now announced that there was opportunity for any counties which were not represented at roll-call to report.

J. B. JAMISON: I move that a committee of five be appointed to report to this Convention on that part of the President's address which refers to the death of our late Secretary, John H. Klippart.

The motion was unanimously agreed to, and the following appointed by the chair as such committee: James B. Jamison, Leo Weltz, J. M. Millikin, Dr. N. S. Townshend, and Dr. Black.

REPORT OF COMMITTEE ON RULES AND ORDER OF BUSINESS.

W. B. McClung, from the Committee on Rules and Order of Business, now made the following report:

The committee, by leave, recommend that the usual parliamentary rules shall be used in the proceedings of this Convention, and propose the following subjects for discussion, and in the following order, to wit:

1. What is the most exhausting crop grown in Ohio?
2. What will make farming more desirable?
3. Which are the best breeds of cattle for Ohio?
4. Does farming pay as well as the learned professions in Ohio?
5. Does fine sheep breeding pay in Ohio?
6. What is the requisite education for farmers' sons?
7. Relation of science to agriculture.

The committee further recommend that nominations for members of the Board shall take place just preceding the noon adjournment, and the election the first business of the evening session.

REPORT OF THE COMMITTEE ON RESOLUTIONS RESPECTING THE DEATH OF SECRETARY JOHN H. KLIPPART.

James B. Jamison, from this committee, reported as follows:

Your committee, appointed to report resolutions on the death of our late Secretary, Mr. John H. Klippart, are now ready to report. Major Millikin will read the report.

The report was read by Major Millikin, as follows:

The decease of our long-time associate and our esteemed friend, John H. Klippart, late Corresponding Secretary of the Ohio State Board of Agriculture, calls loudly upon this Convention for an expression of its appreciation of his character as a man; of his services in his official capacity; of his earnest devotion to the interests of husbandry, and the great loss which has been sustained by his death.

While we strongly reprobate the expression of insincere and extravagant encomiums upon the dead, we nevertheless deem it becoming and proper to speak in truthful words of commendation of the sterling qualities and worthy and useful lives of our departed friends.

This Convention will not be expected to prepare a fitting memorial of the history and laborious life of our deceased friend; that labor of friendship must come from those who shall be afforded time and opportunity for the judicious performance of such a duty. A brief reference, however, to the more important incidents of his life will not be deemed either untimely or inappropriate.

Mr. Klippart was born in Stark county, Ohio, on the 26th day of July, 1823; he departed this life on the 24th of October, 1878. Of his opportunities in early life for obtaining a good education we are not prepared to speak. The active temperament of the man, the peculiar characteristics of his mind, and his qualifications for such employment, led him to become an associate editor of the Ohio Farmer, when conducted by Thomas Brown, deceased. He soon thereafter became more prominently identified with the agricultural interests of Ohio by his election as Corresponding Secretary to our State Board of Agriculture, early in December, 1856. In that responsible and honorable capacity he discharged all the duties pertaining to his office for nearly twenty-two consecutive years, to the acceptance of said Board and in the interest of advanced husbandry.

When he was appointed to said office its duties were generally esteemed to be almost exclusively clerical, or, at most, such as specially belong to the business of a mere compiler. Extensive attainments in a knowledge of either the history or science of agriculture were not esteemed to be indispensable attainments for that position, although scientific gentlemen had previously occupied said position with credit.

In the discharge of his clerical duties no man could well have surpassed Mr. Klippart. He was quick in his perceptions, singularly apt in doing the required work, and always ready and prompt. His systematic and careful habits enabled him to have the business of his office in such trim condition, and in such a state of forwardness, as to occasion no delay, no embarrassment, when pressing business became more urgent.

While he discharged his mere office duties with scrupulous faithfulness, yet he diligently labored for the acquisition of higher and more thorough knowledge of not only the science of agriculture, but of every kindred science, so that he might year by year increase the value of our agricultural reports, which were prepared by him, and published under his editorial supervision. He bestowed his labor upon them not only assiduously, but with an intense desire to make them of great value as a reliable repository of useful and practical information, so that through them the standard of Ohio agricultural literature might be improved and elevated.

In view of the time required for the discharge of his pressing official duties as Secretary, and the performance of other scientific and official obligations which he had assumed, it is a marvel that he was enabled to accomplish so much in the acquisition of valuable scientific knowledge and of general useful information. He, however, was an enthusiastic, persevering, indefatigable worker. He devoted all the time at his command to vigorous study. Notwithstanding the frailty of his physical organization and his impaired strength, he continually and ambitiously pressed forward in his studies, so that he might become thorough in those branches of learning which were most useful to him in his position, and which were congenial to his tastes.

Those of us who have had intimate knowledge of his mental characteristics, and have known him well, can bear cheerful testimony to the kindliness of his nature and the faithfulness of his friendships. In all the relations of life he was kind, genial, and affectionate.

Mr. Klippart had become quite extensively known as Secretary of the Ohio State Board of Agriculture—as a member of literary and scientific associations—abroad and at home. He had acquired a deservedly high standing as an industrious, inquiring worker in his sphere, and as a man entitled to public confidence. Valuable and honorable as the testimonials he may thus have acquired are to his worth, they are of inferior value when compared with the high testimonial bestowed upon him by his continuance for *twenty two successive years* in the office of Corresponding Secretary of the Ohio State Board of Agriculture. He year by year won his reappointment by a strict, faithful, and intelligent discharge of his duties, and thus he acquired the high honor of being regarded as an honest, faithful, and competent public servant.

Dr. N. S. Townshend then read the following resolutions, drawn up by the committee:

Resolved, That in the death of John H. Klippart, who for nearly twenty-two years had been Corresponding Secretary of the Ohio State Board of Agriculture, the agricultural interest of the State sustains a serious loss, the State Board of Agriculture loses a faithful and accomplished officer, and the State of Ohio a citizen who labored incessantly for the public good.

Resolved, That the career of Mr. Klippart—begun under great disadvantages, but ended in marked usefulness and distinction—is worthy the emulation of the young men of our State.

Resolved, That this Convention tenders its sympathy to the bereaved wife and daughter, and mourns with them that a life so full of good service and of future promise should so early have terminated. Many have lived longer, but very few have done more to merit the grateful remembrance of the people of the State.

Resolved, That a copy of the foregoing resolutions be sent to Mr. Klippart's family, and incorporated with the proceedings of this Convention.

At the close of the reading of the resolutions, Dr. Townsend said: Mr. President, to what has been reported by the committee, I would beg to add a few words, which I have prepared hastily in writing that I might save the time of the Convention:

MR. PRESIDENT AND GENTLEMEN OF THE CONVENTION:—To-day we cannot fail to note the absence of one familiar face and voice. John H. Klippart, for more than twenty-one years the Corresponding Secretary of the Ohio State Board of Agriculture, died on the 24th of October. For many months his friends had observed his comparative feebleness, but their solicitude was partly set at rest by the cheerful answer given to all inquiries "that he now felt much better." His physician prescribed relaxation, and assured him that he could discover about him no evidence of organic disease; an assurance which a post mortem examination showed to be fully justified. Mr. Klippart died from paralysis of the muscles concerned in respiration, the result probably of nervous exhaustion consequent upon overwork. Pain and discomfort though often felt, were as often and promptly relieved by electricity in some of its modes of application. Unfortunately, however, the relief and strength thus obtained were as uniformly expended in further labors, instead of in seeking rest and restoration, until finally and unexpectedly he sank beyond the help of his accustomed stimulus, and died at the age of fifty-five in the midst of his usefulness, and but little past the prime of his manhood.

John Hancock Klippart was born near Canton, Stark county, Ohio, July 26, 1823. His ancestors were German, though citizens of the United States for two or three generations. His father, Henry Klippart, was a man of but little education, but of more than average natural ability, and it is probably from him that our friend inherited his peculiar mental activity. His parents were poor, and were able to secure for him only the elementary education of the common schools. In his tenth year, he went to live with an aunt, that he might render her what assistance he could in her work of weaving. At thirteen he became errand boy in a store in Louisville, Stark county, but remained only a few months. He next entered as a clerk in the drug store of Sala & Kline, of Canton; after remaining there some three years, he engaged as clerk in a drug and dry goods store in Massillon, and afterward in a similar store in Mt. Eaton, Wayne county. In 1847, at the age of twenty-four, he was married to Miss Emeline Rahn, of Canton, and soon after set up in a dry goods store on his own account. In 1849 he was appointed postmaster of Osnaling, Stark county. In 1852 he became a contractor on the Ohio & Pennsylvania Railroad, and speedily lost all of his previous earnings. In 1853 he became editor and publisher of a political paper at Canton; this venture not proving a success, he made another newspaper experiment at Cleveland, which was equally unremunerative. Early in 1856 he was employed by Thomas Brown, Esq., upon the *Ohio Farmer*, and near the close of the same year was elected Corresponding Secretary of the State Board of Agriculture. From that time he has been identified with the agricultural interests of our State, and perhaps we may, for a few moments, be permitted to speak of his life-work.

Mr. Klippart was elected to the office of Corresponding Secretary of the State Board—had he been styled General Secretary, it would have better expressed the extent and scope of his duties. Of preceding annual conventions he acted as secretary, and arranged the proceedings for publication.

At the meetings of the State Board, although some member acted as recording secretary, and made a minute of the business transacted, these records were arranged by Mr. Klippart for publication in the annual report. The reports from the several county societies were placed in his charge, and by him arranged and sent to press. Preparations for each State Fair were made by the whole Board, or by its executive committee, but a large share of the work unavoidably fell upon the Secretary. Members of the Board, without compensation, gave their time to arranging for and attending the State Fairs, often at great sacrifice of personal interests, consequently Mr. Klippart, the only salaried officer connected with the Board, was left to look after numerous details. During the fairs innumerable matters required his attention, the services of the Secretary were always in requisition; so, when the fairs were over, an immense number of settlements and adjustments required his attention. Besides this, he kept the office through the year, where, besides his legitimate duties, he answered orally, or by letter, innumerable questions. Perhaps none, except members of the Board, who, of necessity, were often in the office, can form an idea of the multitude of sensible and senseless questions to which the Secretary was expected to furnish a satisfactory answer. But this was merely clerical work, and an immense amount of it required to be done.

In addition to this, Mr. Klippart performed a large amount of literary labor of higher character. He wrote essays on almost all agricultural topics of interest, and these required extensive research; for he brought to the office no practical knowledge of any branch of farming. He translated, or procured the translation of many of the best articles from French and German periodicals. He made laborious compilations of statistics, showing the condition and progress of agriculture within the State. Two elaborate treatises emanated from his pen: one on the "Wheat Plant;" the other on "Drainage." These were first published in the annual reports, and afterwards in book form.

In 1860 Governor Dennison appointed him one of a Board of Commissioners to proceed to the Atlantic seaboard to examine and report on the pleuro-pneumonia of cattle, which was then creating consternation among the stockmen of the country. In 1865 he visited Europe, made an extended tour, and an able report upon the various agricultural institutions there in operation. In 1869 he was appointed by Governor Hayes one of the Assistant Geologists for the State survey. In 1873 he was appointed by Governor Noyes one of a Board of Commissioners to take measures for restocking the waters of the State with edible fish. In 1876 he attended the great centennial exhibition at Philadelphia to present there the agricultural products of Ohio.

From all these appointments, and consequent services rendered to the State, the volumes of the Ohio Agricultural Reports have been enriched. I have been more or less familiar with the contents of these twenty-one volumes, edited by Mr. Klippart. Recently, however, I have taken occasion to look them all over, and I hazard nothing in saying that they constitute a body of agricultural literature upon which the people of any State might look with satisfaction. Of course, the articles that fill these volumes were not all written by Mr. Klippart; for almost every well-known farmer in the State has addded to these volumes by his contributions. Many of these articles, however, were written at Mr. Kilppart's special request, and but for his interest in the subjects discussed, many of those prepared would never have been written. These twenty-one volumes form a splendid monument to his memory, which, being in our own houses, will serve to remind us of his services to the State much better than any stately obelisk erected in a cemetery. I regret to say that either because these reports were distributed gratuitously, or for some other cause, they have not been fully appreciated. How few farmers have taken pains to procure and preserve an unbroken set. I have seen some of these volumes packed away in various court-houses in the State, and the county auditors have had trouble in disposing of them. It would seem that many farmers prefer that some one should tell them what a book contains to reading it for themselves. I have often heard Mr. Klippart answer inquiries by saying, "You have the agricultural reports, read there what Judge Jones, or Dr. Warder, or Major Millikin, or others have said on the subject, and you will not need to make such inquiries.

Valuable lessons may be drawn from such a life as Mr. Klippart's. In the first place, we may learn from it that WORK *is a good thing*, not merely for its objective results, but for its effect upon the worker; it is in the struggle for existence that inherent force finds its opportunity and means of development. Necessity is the mother of invention not only, but it is equally the mother of industry, and enterprise, and economy.

Mr. Klippart's parents could give him but little help; they gave him only a scanty education and no money; consequently, he was compelled to work, and his work not only brought bread and butter, but it afforded him practical training both of body and mind. While a dry goods clerk he became a handsome penman, and also acquired the practice of book-keeping. As a clerk he learned to be accommodating and courteous, and no education is worth more to a person than agreeable manners. Better even than this, he learned just what he could do, and to rely upon himself. Judging of its effect upon Mr. Klippart, no young man need regret that he is compelled to *work*.

Mr. Klippart's life may teach young men not to yield to discouragement. Many things that he undertook did not succeed; he tried being a merchant, a railroad contractor, and an editor; but from some cause or other—not necessarily from any fault of his own—he failed in all. Then he became Secretary of the State Board. In this he proved a success, and found a field where all his previous experiences were valuable to him, and where he had full scope for the exercise and growth of his powers. He did not yield to discouragements; when he failed in one thing he tried another; finally, by perseverance he succeeded. His whole life is an illustration of the value of determination and of perseverance.

Mr. Klippart's life not only shows that it pays to work; it shows that *it pays well to work* HARD. Many men will work hard to make a fortune; they will leave no stone unturned; they will toil early and late to put money in their purse. Others will work equally hard to win fame; what they do or what they suffer counts as nothing, so that it brings distinction. They would seek the bubble reputation, as Shakespeare says, in the cannon's mouth. Mr. Klippart was not less earnest, but his passion was not for wealth or fame, but for knowledge. For this he worked incessantly, in season and out of season: everything within reach was laid under contribution; every mineral, every plant, every insect, or fish, or bird, or animal was made to tell its story and minister to his craving for knowledge, and what is more, this knowledge when acquired was turned to good account. Those of you that have spent time in his office know how frequently men came, having in their hands a mineral: "What is this?" they would ask, and in reply he told, that is pyrites, or hematite, or Galena, or bituminous shale, or mica; or the question would be, "What plant is this; what is its name, and what is it good for?" Or "What insect is this: is it beneficial to the farmer, or is it mischievous?" To thousands of such inquiries he usually had a ready and instructive answer, and the relations of such facts to human well-being were familiarly and courteously explained. Every farmer of the State he regarded as his client. Every department of natural history, because of its close alliance with agriculture, he cultivated with an unflagging zeal. What seemed to many only insignificant facts were by him seen in their relation to use, and that he better understood their true value. Thus, he not only worked, but he worked hard and with a genuine enthusiasm.

Mr. Klippart's life also teaches us that *it does not pay to work too hard.* He had a passion for the acquisition of knowledge; the acquisition was pleasant to him, and he knew so well how to use it when acquired. He never satiated; the more he learned, the more he wished to learn. In consequence of this desire for improvement, he became a member of several scientific associations, both at home and abroad, and was always deeply interested in their proceedings. He sought and obtained an appointment upon the Geological Survey and upon the Fish Commission, doubtless thinking that both appointments might be made, directly or indirectly, conducive to the agricultural interest of the State. Besides this, he became deeply interested in the remains of pre-historic races scattered over the State; and hence, the State Archæological Society found in him a zealous member. The varieties of race, noticeable in the population of this and other States, raised in his mind many questions; and hence, ethnology became with him a favorite study. Now, but for a single reason, all these pursuits would have excited our admiration, and have been commendable. But no man can embrace all subjects of thought, or acquire all knowledge. Our humanity, of necessity, has its limitations. Neither the body nor the mind can be worked beyond certain bounds. Could Mr. Klippart have learned in time the measure and limit of his strength, he might probably have continued to labor another twenty years. As the sad result proves, more of concentration and more of moderation in regard to work would have been more profitable. How difficult it is for any man to be thoroughly wise, but where one errs by voluntarily accepting work beyond his strength, ten thousand err by not utilizing half their force.

In conclusion, then, the lesson of Mr. Klippart's life, if expressed in words, is this: WORK, WORK HARD; DON'T WORK TOO HARD.

B. W. CARLISLE. I move that the resolutions reported by the committee be adopted.

Which was unanimously agreed to.

B. W. CARLISLE. I now move that they, together with the address by

Dr. Townshend, following the same, be spread upon the journal and engrafted in our next annual report.

Agreed to unanimously.

THE PRESIDENT. The next thing in order will be the nomination of candidates for members of the State Board.

Whereupon the following persons were put in nomination: Peter Murphy, of Butler county, for re-election; Charles Smith, of Marion, for re-election; L. B. Wing, of Licking, for re-election; R. Baker, of Lorain; Arvine C. Wales, of Stark; E. J. Hiatt, of Morgan; Henry Milner, of Erie; C. C. Cunningham, of Medina; S. H. Pitkins, of Summit; J. B. Robison, of Allen; T. F. Joy, of Delaware; H. B. Perkins, of Trumbull; R. S. Gilchrist, of Logan, and N. H. Hill, of Hamilton.

On motion, the Convention then took a recess until 1:30 P.M.

AFTERNOON SESSION.

The Convention reassembled at 1:30 P.M., when M. B. Bateham, of Painesville, read the following paper:

SIGNS OF PROGRESS IN OHIO AGRICULTURE, AND BENEFITS RESULTING FROM HARD TIMES.

Mr. President and Members of the Convention: It gives me pleasure to meet this large body of friends of Ohio agriculture. I see before me a number of *veterans* in this cause—those who enlisted in this work with me *thirty-four years ago*, when I commenced in this city the publication of the Ohio Cultivator, and a few months later issued a call for the first State Convention of this kind, to consider the wants and condition of our agriculture, and to devise means for its improvement; also to ask of the Legislature some recognition of this *great* but then *neglected* interest.

I was young then, as were most of you. The men who composed that Convention were generally past middle age, and a majority of them have gone to their final rest; but their works remain. Many of you, no doubt, are familiar with the recorded doings of that Convention and the early history of the State Board of Agriculture which grew out of it; but there are some items of the unwritten history of those times which are of interest in connection with my present theme.

We hear much said in these times of the evils of party strife and the blindness of political prejudice; but these were much worse in the days of which I am speaking. Every public measure at that time was approved or condemned solely from a *party* standpoint, according as it was deemed a *Whig* or a *Democratic* project. When I was starting the Ohio Cultivator, I found that Sam. Medary, the leading Democratic editor, would do my printing on better terms than the printers of the other party; but when it was known that the paper was printed on a Democratic press, a number of the Whig editors refused to commend it to their farming readers, from the belief that it was secretly owned by Medary, or would in some way aid his party. Then when the State Board was organized, and it was found that all the active members were *Whigs*, with an ex-Whig Governor (Allen Trimble) as its President, we were told that it would be vain to ask for any aid or recognition for such a Board from a Democratic Legislature, so the chief of the Democrats, Sam. Medary, was persuaded to be the nominal Secretary of the Board, on my promising to do all the work. This satisfied the timid ones, and after the

Board had worked one year without a dollar of funds to defray expenses, it was resolved to ask the Legislature for an appropriation of *five hundred dollars* to carry on its plans. The worthy President had not faith that a dollar would be obtained from that source; but by a little lobbying the Legislature granted the Board the munificent sum of *two hundred dollars*, to be expended for the promotion of agriculture in Ohio; while at the same time they wasted over *twenty thousand dollars* in party wrangling, and the appointment of a United States Senator!

Gratifying as is the contrast in many respects between those times and the present, I think you will agree with me as much progress as should have been has not been made, the past thirty-four years, in the promotion of agriculture in Ohio—especially in the intellectual and social improvement ot the mass of our farmers—and we all know that the *first* and *greatest step* in agricultural improvement is *the improvement of the farmers and their families*. In these respects, it must be admitted, the progress of our rural population has not nearly kept pace with that of our towns and cities.

I think that the attention of our State Board, and their late Secretary, has been too largely devoted to the mere externals of agricultural improvement; and there certainly has been great progress in these—the general introduction of improved breeds of animals, and better styles of implements and machines. I would not under-value these, but I claim that they are of less importance than the intellectual and social elevation of the farmers and their children. It is to the signs of progress in this direction that I wish to invite attention.

First among the hopeful signs, is the general waking up of the farmers and the friends of education throughout the State, to the importance of some radical amendment to our school laws, so as to secure the means of better education for farmers' children who can not attend the graded schools of the villages. This is a reform which has long been needed, and the lack of which has been a sad detriment to thousands of farmers' sons and daughters now past school age. The discussion which has been going on for the past year on this subject, and the conclusions that have been reached by the ablest educators in the State, it is hoped will result in the adoption of the wisest measures, and the better education of our coming race of farmers.

But I promised to speak of the benefits resulting to agriculture from the late "hard times," and it is in this direction, I conceive, that we find the most hopeful signs of progress. We are told that "sweet are the uses of adversity," and in order that we may the better appreciate the beneficial results of the hard times, we need to glance at the influences of the flush times the few years preceding. Manufacture, commerce, and speculation were then pushed to their utmost limit; fortunes seemed easily made, and every man possessed of money or credit, with a fair amount of brains, seemed determined to obtain wealth in some other way than by God-appointed labor or doing valuable service for others. Many farmers caught the prevailing mania for speculation, and some even mortgaged their farms to raise money to invest in railroad schemes or speculation in stocks or produce. I have been told, for instance, that in a line of thirty miles down this Scioto Valley, nearly one-half the farmers were bankrupted by the speculations of those times. But worst of all, in its pernicious effects, was the development of the popular sentiment that *labor was degrading to people claiming respectability*, and farming was a life of drudgery which all young people should avoid, if it was possible for them to find positions or employment in town or city. Such sentiments, we learn, prevailed in ancient Rome, and hastened her downfall. They have long prevailed to some extent in this country, but not to such degree as during this time of our great fictitious prosperity.

The consequence was, all the farmers' sons who had education and ambition enough to have made leading, progressive farmers, left their country homes for the town or city, or to join the great army of bummers and traveling agents. The sons and daughters who remained on the farms were secretly discontented with their lot, and envied their acquaintances in town, while the latter felt pity, akin to contempt, for their "country cousins." All this, of course, affected unhappily the minds of farmers generally, and there was very little effort in the way of improvement, excepting as some were prompted to improve the appearance of their farms in the hope of selling them shortly for better prices. And not a few good farmers whose sons had left them, sold their farms and moved into the towns, to please their wives and daughters, and give the latter the advantages of better education and society. By these influences, *the largest share of the best young blood of our farming population was drawn out of the profession*, and there was little chance for any real improvement in agriculture.

But the crisis came, and none too soon. The bubbles of speculation bursted, and the over-stimulated whirl of trade and manufacture suddenly ceased, leaving their managers bankrupt, and throwing out of employment thousands of workmen, clerks, and salesmen. Then came the "hard times" to merchants, mechanics, and townspeople generally, with hosts of failures and wasting anxiety. Many young men who had commenced business failed, and many more who had been employed as clerks were no longer wanted. Families that had been thought wealthy, now lacked the means of comfortable subsistence, and were glad to receive weekly visits and contributions to their larder from their farming relatives, if they had any.

Now commenced the change of popular sentiment in regard to farming and farm life, which is working most beneficially for agriculture. While business men were failing or losing heavily by the failures of others, and the accumulations of a life-time were vanishing, leaving only a burden of debt and anxiety as to the means of future subsistence, it was natural they should regard, with feelings of envy, the position of the farmers, with their bountiful crops and all the means of comfort, with freedom from debt and care.

Many of the farmers' sons, who but a few years before forsook farm-life because it was too low for their ambition, now, schooled by adversity, had their views and feelings so changed that they gladly returned to their father's house, and to manly labor on the farm. Some older business men, also, who learned farming in their boyhood, purchased farms with the remants of their fortunes, and moved on to them, to spend the remainder of their days in the quietude of rural life. Both these classes are now zealous advocates of *improved* farming, and are convinced that farm-life need not be such drudgery as it is often made. They are striving by reading and study, combined with experience and observation, to make farming an intellectual and scientific as well as profitable pursuit. This feeling is happily becoming quite general in some neighborhoods.

The increased popular esteem for farming, and the disposition of the sons to remain on the farms is, of course, giving fresh life and cheer to farmers and their families, and increasing their *self respect*, which is the first step towards intellectual, social, and moral advancement. Hence we have seen, within a few years, a disposition to read agricultural books and papers, and to discuss with each other the principles and practice of their profession, and all matters that pertain to their interests or duties as farmers and citizens.

The Grange Movement.—One of the most hopeful signs of progress among farmers is the organization and operation of nearly one thousand Granges, besides numerous farmers' clubs in our State. We may differ in opinions respecting some of the features of the Grange, but I think all will admit that the principles of the Order are just and beneficial; and the social and educational influences are destined to accomplish more for the promotion of agriculture, by the *improvement of farmers and their families* than any other agency that has ever been in operation. It is only within a year or two past that the real influence of the Grange movement has begun to make itself felt. Much time was spent in organizing and eradicating erroneous notions, and then in teaching how their work can best be done. This preliminary work is still going on in many cases, along with the more practical business. With its forty thousand members in the State, working harmoniously and intelligently for the benefit of agriculture, who can estimate the amount of good that this agency may accomplish in the years to come!

The Fertilizer Movement.—Among the signs of progess in Ohio agriculture, I mention also the introduction of the use of commercial fertilizers, not so much on account of the intrinsic merits of these articles, as on account of the benefits that have arisen from their use, in setting the minds of farmers to thinking and reading on the scientific principles which are involved therein, and thus overcoming the prejudice which existed in some minds against scientific farming.

The rapidity with which the use of these fertilizers has increased, and the present extent of their use, especially in the eastern half of the State, are quite remarkable, and may be largely attributed to the very general discussion of the subject in the Grange meetings. From facts that have come to me, I believe that not less than ten thousand tons of bone-dust and superphosphate were purchased and used by farmers of Ohio the past year. Much of this was distributed through the business agencies of the Grange.

Four or five years ago only here and there a farmer ventured to try these fertilizers, in consequence of reading about them in the agricultural papers. The experiments were on a small scale at first, but finding good results, larger amounts were used the next season, and when the crops matured doubting and prejudiced neighbors were invited to note the results. When the product of wheat was doubled by the use of a few dollars' worth of bone-dust, as was often the case, the argument was of a convincing kind, even to dull intellects, and some who never before would admit that they could derive any benefit from agricultural papers, were now quite desirous of reading about the use of fertilizers, and ready to admit that there was something in scientific farming. I think it is quite probable that some farmers who are now so enthusiastic in their belief that these fertilizers are going to work a renovation of their old lands will be measurably disappointed after a few years, unless other well-known methods of keeping up fertility are also used. I have no doubt that phosphoric acid—the active principle of bone-dust—is the one element most wanting in these old wheat soils at this time; but after a few pretty liberal applications of bone the effect may be very slight, showing that this element is present in sufficient supply, and other manures or fertilizers are needed. All these matters will soon be understood by those who have set to work investigating this subject; and the grand thing about the fertilizer movement is, that *it has set thousands of farmers to reading and experimenting in a manner they had never done before*, and it is now a topic of discussion in hundreds of Grange meetings, which cannot fail to be greatly useful in stimulating young farmers especially, to thought and investigation. Hence, I say again, I regard this movement as another of the hopeful *signs of progress in Ohio agriculture.*

I would also mention, as one of these signs of progress, the arrangement for the delivery of the course of lectures for farmers, at the (Agricultural) State University. Much good will no doubt result therefrom, not only to those who are so fortunate as to attend them, but also, through their teachings and practice, to many of their neighbors. I trust this will be but the commencement of a long series of annual lectures of this kind, and that the numbers who will attend them in future years may be indefinitely increased.

In conclusion, gentlemen, I feel sure that you will agree with me that the signs are auspicious for the commencement of an era of *greater agricultural progress* than we have yet seen in Ohio; and I am sure you will agree with me in asking our State Board of Agriculture *to devise and adopt some advanced measures* for the promotion of this great interest. It is quite time, for instance, that we had in this great State at least one *experimental* farm, managed by men of science and practical experience, where many of the problems could be solved pertaining to the tillage of the soil and the methods of preserving and increasing the fertility of our soils, the merits and value of the various fertilizers for the different soils and crops, etc. But I will leave this range of the subject for others, and trust that it may be well considered by the Board, if there is not time for its discussion by this Convention.

The subject for discussion now being, "What is the most exhaustive crop grown in Ohio?" it was opened, as follows, by W. N. COWDEN:

I was asked, two or three hours ago, to make some remarks upon this subject: "What is the most exhaustive crop grown in Ohio?" I had desired to speak after some one had opened the discussion, following him for a few moments. However, as that is not the condition of things, I must not let this opportunity pass without saying something with regard to a crop which we in southern Ohio are raising, I think, and as I will prove by figures, to our detriment. It is a fact that hundreds and thousands of acres of land in southern Ohio are being exhausted of those mineral elements which feed plants and make up crops. I think that the tobacco crop, which we in southern Ohio have so long grown, is the cause of the exhaustion of the soils there. It is very difficult, on our hills, now, to get the fields reseeded—to get a catch of grass, as we call it—after we quit cropping in tobacco, and other crops are cultivated in. Now, I attribute this to the fact that we have exhausted our soils by growing tobacco on them. We have exhausted our soils to such an extent, in many places, that we can not restore it by the use of clover.

Chemical science has demonstrated to us the fact that tobacco and clover feed on very nearly the same mineral elements. But in the case of tobacco, it is taken off the soil—taken out of our State and country. Ohio tobacco is all marketed in France and Berlin. But in the case of clover it is just as exhaustive, if we take the hay off, and take all the seed off, and don't restore back to the fields the plant elements. But when we raise clover we leave a great part of the plant food in the ground. We can not take it all off when we make hay and pasture; and then when we turn it under, in the shape of green crops, we restore all the elements destroyed, and all the additional elements of the clover. While growing only tobacco, we impoverish the soil.

For one reason and another, I have taken special pains to look up the elements on which plants feed in the soils. I have had access to some authorities—perhaps have not found as many as some of you, but have found some. Southern Ohio, and, I suppose, Brown and Montgomery counties, ought to quit raising tobacco. I have some facts that show to me that we in southern Ohio ought to cease the cultivation of tobacco. Here is a table copied from the Agricultural Report for 1872, prepared by Prof. Wolff, of the Agricultural Academy of Hohenheim. I have also had access to the tables of Bosseit, Reiman, Dr. Jackson, of Massachusetts, and Dr. Peters, of Kentucky, who all substantially agree in the elements extracted by the various crops we produce. I need not mention the fact that there are certain non-essential elements in the production of plants, and that there are certain essential elements. There are certain elements of plant food found in our soils without which no plant can grow—without which no plant can live at all; for instance, potash, nitrogen, magnesia, phosphoric acid, and sulphuric acid. These, I believe, our chemists class as the essential elements. In other words, soils in which these are absent, though the others may be present in abundance, can not sustain plant life. While there are other elements which the plants feed upon, yet if they are taken out the plants will grow.

I have, in this table, nearly all the essential elements for plant life. In this table I have shown ordinary plants. First, the wheat plant. For instance, in every 1,000 lbs of wheat sold off of our farms, we take away 20.8 lbs. of nitrogen, 5.5 lbs. of potash, 2.2 lbs. of magnesia, .6 lb. of lime, 8.2 lbs. of phosphoric acid, and .4 lb. of sulphuric acid. These are the essential elements of the plants, without which plants can not grow. If we take 1,000 lbs. of straw, we sell 3.2 lbs. of nitrogen, 4.9 lbs. of potash, 1.1 lbs. of magnesia, 2.7 lbs. of lime, 2.3 lbs. of phosphoric acid, and 1.2 lbs. of sulphuric acid. If we sell 1,000 lbs. of rye, we sell 17.6 lbs. of nitrogen, 5.4 lbs. of potash, 1.9 lbs. of magnesia, .5 lb. of lime, 8.2 lbs. of phosphoric acid, and .4 lb. of sulphuric acid. If we take corn as another example, when we sell 1,000 lbs. of it we sell 16 lbs. of nitrogen, 3.3 lbs. of potash, 1.8 lbs. of magnesia, .3 lb. of lime, 5.5 lbs. of phosphoric acid, and .1 lb. of sulphuric acid. Now, take tobacco. In every 1,000 lbs. we sell 46 lbs. of nitrogen, 54.1 lbs. of potash, 20.7 lbs. of magnesia, 73.1 lbs. of lime, 7.1 lbs. of phosphoric acid, and 7.7 lbs. of sulphuric acid. In other words, all the other items enumerated—wheat, wheat straw, rye, rye straw, and the corn—if we sell 1,000 lbs. of each one of these, the total amount sold of potash does not equal the amount of potash sold in 1,000 lbs. of tobacco. And in the case of these other essential elements, the contrast is still greater; 1,000 lbs. of tobacco exhausts the soil of three times as much of the essential elements of plant life as any other of the crops grown in Ohio. Hence I say, I do hope to see, in the near future, the cultivation of this crop abandoned in Ohio. I think that, in view of its effect upon the soils, it is not a remunerative crop.

The next topic, "What will make farming more desirable?" was passed without discussion.

R. Baker, of Lorain county, then read a paper on

WHICH ARE THE BEST BREEDS OF CATTLE FOR OHIO?

This question gives a wide scope for discussion. By taking in the whole range of the State, it cannot be expected for all the members of this Convention to agree upon any one or two breeds. Almost every occupier of the pastures of Ohio have their minds settled as to the kind of cattle they prefer. Some men have a fancy for the Alderney—they are up to the highest standard of excellence for dairy purposes, in their estimation; and some men will insist that they are, so far as they go, just as good for beef as any other race of cattle. The Ayrshires, too, have their admirers, who claim that for milk they cannot be excelled, and even go further, and contend that they will fatten easily, and also are to be admired for their beauty. Others claim that the hornless Scotch cattle—Galloways and Aberdeens—are to take the field against all other breeds, suggesting that it would be well to cross them with the Shorthorns and others, and get rid of the bones, which are useless. The Holsteins, too, are held by a few men to be perfect as milkers, and equally as good as any breed for beef. And then we have the Hereford, and there is not a man breeding this class but claims them to be superior to all other kinds. One large breeder insists that they are destined to prevail all over the country, and *consequently*, must prevail in Ohio. The handsome and somewhat small Devon have still a claim, and are looked upon as the better breed, and for all practical purposes claim a standing among those of any other class. Then comes the Shorthorn, by many called the "Noble Shorthorn." Some breeders and admirers of the race claim that for dairying purposes this breed is best adapted, others, equally interested, insist that their place is for beef. Among the latter are *some* of our large exhibiters at the fairs. If such do not say it, *their cattle speak for them.*

With each of these breeds having so many advocates, we may find it difficult to narrow down to one, two, or even three of them. It is not my intention to advocate a breed merely for a few to pet, but such breed or breeds, with their grades, that are best adapted for the general farmer of Ohio. The bulk of the cattle in our State are not, and probably never will be, "thoroughbreds." I will first endeavor to show which of the above named breeds are *not* adapted for the general farmer of Ohio. The Alderneys, now fashionably called Jerseys, etc., are evidently not the kind for Ohio farmers. Their service is in the paddock and parks of the rich, or, it may be, for a city family cow. Their cream and butter cannot be surpassed. The milk, when skimmed, is very inferior, and when the cow has run her course in the dairy she will not pay to fatten. The surplus bull calves will not pay either for veal or to castrate for steers. The Galloways are good for beef, and the bulls might answer to reduce the horns of the Texas cattle. They would not only do this, but would improve them in many essential points. These, with other Scotch breeds, the West Highlander, Angus or Aberdeen, and others, are not surpassed or equaled by any breed for their rich quality of fine, marbled beef. But these being slow in their growth and maturity, and also lacking the milking qualities, are not the breeds for Ohio. The Hereford is a hardy, useful animal, and this breed, where beef alone is the object, might answer. They will fatten easily on good pastures, and compare with or surpass almost any kind to be sold direct from the pastures; but for winter feeding they are not so well adapted as the Shorthorn. But with all their excellent qualities as beef-makers, being poor milkers, they are not adapted for Ohio, as may be easily seen by their slow spreading. Notwithstanding their attentive and energetic advocates, who have done their best to *push* them along for more than a quarter of a century, they have not got a foothold, to any extent, in the State, south of the Reserve," and but very few of the breed outside of Lorain county. The Holsteins are deep milkers—have the character, when *well* fed, of keeping up a good flow of milk all through the season. Many claim that their aptitude to fatten is equal to the Shorthorn's, and that the steers are as profitable beef-makers as any breed. It is very evident that many animals of this breed are too bony ever to furnish so nice a quality of beef as the Shorthorn. The cross of the bulls on to the common cows does not compare favorably with that of the Shorthorn. Unless it can be proved that their excellence supercedes that of the Shorthorn, and sufficiently so to make them more profitable for all purposes, or even as milkers, it would be unwise to take this as the best, or one of the best, breeds for Ohio.

There may be sections of Ohio, where the land is high and rolling, with not over rich pastures. And there certainly is much comparatively wild land, low and wet, and with inferior herbage, and also but partially cleared land, where it would not be profitable to put on large, heavy cattle, that need full feed, so that they may have sufficient time to rest. In these cases it may be that the Devon breed, being active and small, is well adapted for hilly land and where pastures are short, so that the cattle have to roam wide to get their fill. The cows are not extra milkers, but the milk is rich, and the quality of butter good. The steers, when well fatted, make a carcass of prime beef. This breed may be more profitable on these hilly and thin pastures, if beef is the object; then on the low, rough land, with inferior grass, where milk is the object. The Ayrshires are well adapted, especially if the milk is to be made into cheese. The breed is hardy and active, better calculated to travel after their feed than the heavy Shorthorn. The heifers will breed at an early age, and they are as a class true milkers, being but few that will not supply a large quantity, and keep it up for a long season. If more than one breed is desirable, the Devons and Ayrshires, for the purposes above named, may be best for such portions of Ohio, where the land is hilly and thin, and in partially cleared sections.

We come now to the Shorthorn. This class of cattle has been successful for generations as pre-eminently meritorious as milkers, as well as for beef. They have succeeded in northern countries as well as in the southern, and here in the States they have a strong foothold all the way from New England to the rich pastures of the far West, and here in Ohio they have been successful in adding immensely to the wealth of the State. This breed has so thoroughly established itself in the State that it seems almost a waste of time to present its claims for the consideration of the majority of Ohio farmers. There may be those who have not adopted the use of this breed, because they do not believe in discarding or in improving their scrubs, which were good enough for their forefathers, and just as good for them. This discussion should be for the benefit of this class of farmers. There is still another class of men prejudiced against Shorthorns, not being prepared with a very good reason. Their chief reason, if one at all, is that Mr. So-and-so and So-and-so will not have them; the Herefords and Jerseys are better. The parties referred to are evidently interested in these breeds, and have used every influence to prejudice these people. The only plan I know of respecting this class of men is, they being so closely "joined to their idols"—let them alone.

I will endeavor to show wherein this breed of Shorthorns, with its grades, is the best for Ohio. Here let me say that I am not prejudiced against nor in favor of any particular family. These divisions having been made by parties for their special gratification, and these men have been building up this and the other family till many of them claim that these peculiar pet strains are the only true *and model* Shorthorn. We are well aware that many of our best animals are in these selected strains, but we now wish to advocate the merits of the Shorthorn as a class, and our motto is, and ever has been, to look upon those as the best that combine the most of those points which go to make up an animal of the greatest excellence, whether they belong to the descendants of a Bates, a Booth, or to those (despised by many) of the Kentucky importation of 1817.

First—The broad and deep chest, moderately thick and mellow skin, with an abundance of soft fine hair, show them to be animals of undeniable constitution, which is the first and essential point to be considered when selecting this or any other kind of live farm stock. Perhaps, as a class, no other race of cattle are superior or equal in this good quality, which is so essential for a robust, vigorous, and healthy growth.

Second—Early maturity is another eminently good quality in their favor. By liberal feeding, the heifers make sufficient growth that they can be bred to bring a calf at two years and three months old, and the steers may be put into market at thirty to thirty-three months old, giving a carcass of fine rich beef, not to be excelled or equaled by any other breed at this early age.

Third—Another characteristic is, that when not pampered and held back for show purposes, the cows are regular breeders. Unless by continued in-and-in breeding, as in the Duchess tribe, such families may be more uncertain.

Fourth—The milking properties are very prominent. In their native country, they have stood at the head for generations, and still hold the position in most, if not in all, of the large city dairies. They give an abundant mess at every milking, and continue the supply for nine or ten months, or within a few weeks of calving. If they are superceded by the Alderney for yellow cream and butter, they are not for quantity, nor for richness when feeding on good luxuriant herbage. The butter made from the milk of the Shorthorn cows can not be surpassed in excllence when on equal feed. There have been instances of large amounts of butter per day; but in many trials there have been individual cows that would produce over two pounds per day, and this is not uncommon. And but few cows of any breed have yielded so large amount of butter during the year as cows of this breed. Experience has made it clear that this excellent trait is not confined to any one of the so-called families or strains. We often hear the term used, "Milking Shorthorns." Why? In their early days the whole race were looked upon as milkers, their fattening qualities being secondary. But when the early breeders became sufficiently interested in the breeding of this class, and gave strict attention to the business of coupling the animals so as to retain the milking qualities and increase their aptitude to fatten, then it was soon made clear that this was the most desirable of all breeds for both purposes. The aim of the early breeders being to produce a useful animal—an animal to meet the demand for beef, butter, and cheese—they *required* of these animals, *rather than pedigree*, milk, beef, moderately thick and soft skin, covered with dense fine hair.

Fifth—The *pure* Shorthorn is also best for beef. At an early age they will produce a very level carcass of fine marbled beef, though some men claim that this is not "number one" quality. Here let us look at the fact: that there are but few, very few, pure Shorthorn steers put into market—the demand being so great for bulls that it does not pay to castrate and turn them into beef. Take the London market, for instance. The quotations there are, and have been for many years, highest for "Scots," Shorthorns being quoted lower. Many of us know that the quotation takes in *all grades* of this breed, and the number of bullocks of the class, from the lowest grade up to thoroughbred, is simply "legion;" when, on the other hand, the Scotch cattle are represented by the best calves made into steers, and spayed heifers. Herefords, likewise, in that market, are represented by the very best, there not being the demand for bull calves. For all practical purposes, the well-bred Shorthorn can not be excelled, and the breeders have the satisfaction to know that *this beef* is backed up by cows being at the head of all the horned tribe for other useful purposes. During the short time of excitement over the *fashionable* pedigrees and exorbitant prices, which made so many crazy, the general farmer has looked shy at the breed, and if he had anticipated making purchases, he became disheartened, and by the continual clamor through the "press" of this and that family realizing those high prices, he concluded that others were inferior, and not being able to purchase the fashionable ones, would not invest in the general run of useful Shorthorns. The days of high prices soon run their course, so that now prices have become quite reasonable, and the general farmers of Ohio see clearly that *a pedigree without individual excellence* is *worthless*. We are glad to be able to say that a large majority of Ohio breeders were not worked up by those fancy and ruinous prices; consequently, Ohio has been steadily filling up with this desirable breed, which, with their grades, I claim is the best breed for the larger portion of Ohio.

Sixth—No other breed will cross so well on all kind of common cows. The Shorthorn bull leaves the stamp, to a great degree, every time, so that the first cross is often equal to the second in other breeds. We do not wish to be understood that the stamp of color merely is given, but, in a great measure, the shape and general characteristics of the breed. Most breeds will give the color, and yet lack to make the desired improvements. The Hereford, for instance, is almost sure to give the white face, but does not make a good cross. By using nothing but thoroughbred bulls on the common or grade cows, a class of animals are raised that are suitable and remunerative alike, in a good degree, for the farmers of Ohio. The cows of high grades are nearly equal, and, in many cases, for milk quite so, to the pure blood. They are abundant milkers and easy feeders; and if not quite so fine in quality when fatted, will give a good serviceable carcass of beef. The steers and surplus heifers from these cows are readily fatted at an early age, and the beef will realize more than the average price.

We cannot put these grades on a footing with the pure Shorthorns, but we will venture to say that as a part of the pure they are, under the circumstances, the kind for the general farmer of Ohio, for the reason that all are not able to procure the thoroughbred. It is a great mistake, and to be lamented, that the grade bulls should be bred to cows having one or more crosses. It is more profitable to purchase a thoroughbred calf, which can be had for the price of a good fat steer. When we class these grades with the class of pure Shorthorns as the best for Ohio, let it be understood that these grades should be *bred up* nearer in every generation, and thus making them for all practical purposes a very desirable class of cattle, adapted for the rich pastures of our State, whether as cows for dairying purposes, and raising calves to be grazed along for beef, or as steers, capable of making a profitable carcass of rich beef at an early age.

Many will agree with me when I affirm that no cattle ever brought into Ohio combine so many desirable and strictly useful qualities as the Shorthorns and their grades. One great error with many of our Ohio farmers is that they expect more of this breed than they have any right to hope for. To think that these cattle will thrive where many others would starve is unwise and unreasonable; such parties should not purchase them if they expect them to succeed when left to shift for themselves during the inclement weather, or to expect them to thrive on scanty pastures, or with a short supply of winter food. The cattle to be abused in this way and put to such disadvantage, we would not consider them the best for Ohio. No grazier or farmer has a right to expect any breed to be profitable when neglected and abused in this way, and certainly such men never ought to own a live farm animal. Every animal should have an abundance of good, wholesome food, as they have a capacity to lay it away quite profitably to all who employ them, as a means of turning the farm products either into a large quantity of rich milk, to be made into butter or cheese, or into a large carcass of rich beef, which in either case will realize the highest market price.

I have said that the Devons and Ayrshires, under some circumstances, for some portion of the State may be best, but for the many good and useful qualities which have been named, and for their adaptability for the varying climate of the State, I claim that the Shorthorns, with their grades, is the best breed of cattle for Ohio.

The topic, "Does Farming Pay as well as the Learned Professions in Ohio?" being next in order, was passed.

A paper by E. J. Hiatt, on the question, "Does Fine Sheep Breeding Pay in Ohio?" was read by M. J. Lawrence, as follows:

GENTLEMEN: Sheep husbandry is of ancient origin. The production of wool and mutton has been a favorite and necessary pursuit of man for many centuries. We call attention to the antiquity of this pursuit only for the purpose of showing that it is not a new and untried branch of agriculture. The subject on which your Secretary has invited me to write is, "Does fine sheep breeding pay in Ohio?" Our remarks will be brief, and only embrace some of the leading features of this important subject. In this climate there can be no question as to the economy and comfort in the abundant use of both wool and mutton; these products may be styled as luxuries and also as necessaries of life. The question that most interests the members of this Convention, who are representative farmers from all parts of the State, is, does it pay as well to grow Merino wool and mutton in Ohio as to engage in other branches of agriculture? The first thought should be, is our soil and climate adapted to their growth? The history of more than half a century will answer in the affirmative, where this class of sheep have been and are being profitably grown, and are also being improved in both carcass and fleece, so as to make them more perfect, therefore making them profitable as wool and mutton producers. The question very naturally arises, what does it cost to keep a sheep one year? This will be found to vary considerably in different parts of the State; the estimate herein given is for pasture and feed remote from city market: One hundred sheep purchased at $4.00 per head; the interest on this sum at 7 per cent., $28.00; pasture for seven months, from May 1st to December 1st, at 10 cents per month, $70.00; grain feed for five months, 1½ bushels per head, to consist of one-half corn, the remainder to be equal parts oats and bran, or their equivalent in some other ground feed, this mixed feed to cost 40 cents per bushel, $60.00; hay at $5.00 per ton, 3 pounds per head daily, $112.50; cost of shearing and tying wool, $10.00; one year's supply of salt, $1.50. The total outlay for one year is $282.00. We estimate this flock when purchased to consist of forty breeding ewes, twenty lambs (or tegs), twenty yearlings, and twenty two-year-olds; the last sixty are half wethers. The produce of the flock will be thirty-eight lambs; this allows a loss of five per cent. of the lambs. The flock will produce seven hundred pounds of wool, washed in the usual way; this at 36 cents per pound brings $252.00. In this connection it may not be out of place to furnish evidence in reference to the price of wool. The following prices were furnished by George Livermore and George W. Bond, of Boston: From 1827 to 1876, both years inclusive, a period of fifty years, the average price of fine Merino wool in the Boston market has been 53 cents, of medium, including half-blood Merino, 47 cents, and of coarse, 40 cents.

Thirty-six cents, the price at which the wool of this flock is estimated, is eleven cents below the average price of medium wool in Boston during the fifty years above referred to. It need not cost to exceed four cents per pound to place the wool in market, this to include freight, drayage, insurance, etc.

At the expiration of the year, five per cent. of the whole number should be deducted for losses by disease, etc. This will leave ninety-five of the original purchase. Add the thirty-eight tegs, and the flock will number one hundred and thirty-three, which will admit of selling thirty-three wethers and ewes for mutton, at $4 per head, $132. Add this sum to the money received for wool, and we have an income of $384. Deduct from this the $282 of outlay, and it leaves a profit of $102, and the flock kept up to its full number.

This calculation is on a flock of good high-grade merinos, the grown ewes to weigh one hundred pounds each. The supply of hay will be a little more than can be used in the five months, but this surplus can be fed during the seven months of pasturing, on rainy and very hot days. Twenty-five or even fifty pounds of good hay per head can be profitably consumed in the sheds at such times. The manure is to pay for the labor in caring for the sheep. The necessity and value of manure on the farm is yearly becoming better understood and acknowledged.

Allow us to call attention to at least three different ways of feeding or sustaining the soil. The first is applying manure from stock grown or fed upon the farm; the second is plowing under green crops, and the third is purchasing and applying commercial fertilizers. The last is a direct outlay of money, therefore the cost can more readily be estimated, which is usually about three dollars per acre for each application. When clover is plowed under, the value of the crop thus sacrificed should be estimated at about two and a half or three dollars per acre, for this amount can be realized from a good average crop of clover for pasture and hay for sheep. If these sacrifices of crops to maintain the productiveness of the soil can be avoided by keeping a goodly number of sheep, the value of their manure may be better understood. Allow us to quote the following from the late M. Thiers, the most eminent of French statesmen, in his discourse in the Legislative Assembly, in 1870. He said: "Upon four-fifths of the territory, where the soil is stony and only fine grasses abound, the fine sheep alone can convert this grass into flesh and manure. * * * The agricultural industry of France can not dispense with sheep." There is abundant evidence showing the great value placed upon sheep in France, England, and other European countries, as fertilizers of the soil.

A comparison between the twelve counties of this State that have the largest number of sheep, and the twelve counties that have the smallest number, is herein given. In this comparison the counties having cities of more than thirty thousand population are not considered. The State of Ohio, in 1877, had 3,724,040 sheep. (See State Agricultural Report.) Twelve counties—Licking, Harrison, Guernsey, Knox, Muskingum, Belmont, Columbiana, Carroll, Jefferson, Morrow, Coshocton, and Delaware—had 1,511,080 sheep. The twelve counties having the smallest number of sheep embraced in this comparison—Paulding, Lawrence, Scioto, Pike, Adams, Butler, Darke, Preble, Miami, Clermont, Van Wert, and Jackson—had 93,159 sheep. The twelve counties first named had, in round numbers, 1,400,000 more sheep than the latter twelve. The first named counties plowed under for manure, in 1876, 752 acres of clover, and the last twelve counties plowed under 9,591 acres. This is evidence that in these counties where but few sheep are kept, it becomes necessary to sacrifice yearly 8,839 acres of clover to feed the soil. The last named twelve counties grow a larger amount of corn and hogs than the first twelve, but the first twelve counties produce more horses, cattle, butter, wheat, timothy hay, and clover hay, showing that where sheep are grown in considerable numbers, the land yields abundant in other productions. The importance of maintaining and improving the fertility of our soil is likely to receive more attention in the near future than it has in the past. The necessity for this is forcing itself upon us.

A portion of the farmers of Ohio continue to keep a class of sheep that only shear from three and a half to four pounds per head, which return but a very small profit, if indeed any. There is a class of sheep grown in Ohio which give a larger profit than the flock to which we first called your attention in this article, but we will only briefly refer to it here. The pure American merino is of good size, and produces an abundant fleece. Allow us to present the record of one of this variety—Sue, 177. (For her pedigree, see U. S. Merino Sheep Register, page 135.) She was lambed in 1865, and has produced of unwashed wool 182 lbs., which has sold for an average of 30 cents per pound—amounting to $54.60—averaging 14 lbs. to the fleece. This ewe and her progeny, tracing through the female line, has produced in the aggregate 1,759 lbs. 8 oz., selling for $527.85. Her progeny, traced as stated above, now number twenty-seven. The full-grown ewes average in weight of carcass about 115 lbs. This ewe is living, and in lamb at the present time. Her and her progeny have yielded 112 fleeces of wool that have sold for an average of $4.80 per fleece.

And now, Mr. President and gentlemen, if this brief and hastily written paper may be the cause of drawing out some able discussions on this important branch of Ohio agriculture by the members of this intelligent body, we shall have accomplished all we desired in this attempt.

J. C. **Stevens** then read the following paper on the same subject:

In determining the kind of sheep for the breeder or wool-grower to keep, much depends upon circumstances, climate, soil, status of agriculture and local demand for meat or wool. Of the six hundred millions of sheep of the world, England has thirty-five millions, and not a Merino kept by her, while nearly all of the improved sheep of continental Europe have descended from the several Spanish Merino families. Why fine-wool sheep are kept in continental Europe to the exclusion of others, is a question worthy of note. One reason is found in the fact that the peasantry and working men of the Continent live largely on bread and beer, eating very little meat, while they must have clothing. Another reason exists in the agricultural status, climate, and soil of these continental countries: more pasture, less roots and grains, and less intensive culture. While England, with a dense population to feed, and high-priced lands, her necessity for quickly-grown meat, and her unfavorable soil and climate for the growth of fine-wool sheep, has compelled her to grow mutton and long-wools, of which the flesh-producing aptitudes is found in the highest degree, realizing from her thirty-five millions of sheep an annual product of the value of one hundred and fifty millions of dollars. On high-priced lands, with intensive culture, with but few in a flock, and on small farms, convenient to a good meat market, there is no sheep that will pay better to keep than the mutton varieties; likewise, there is a deficiency of English combing-wools. Our consumption of these wools is eight millions of pounds, while we produce only about four millions of pounds; hence we import from England and Canada the other four millions. We therefore annually send abroad for these wools about two millions of dollars, which ought, and may be profitably produced at home, saying nothing about the value of goods, the products of these wools imported from England and elsewhere.

If we aspire to industrial independence, we must speedily put a stop to the importation of the prime necessaries of life, and grow these wools for the American manufacturer. But the question for discussion is, Does fine sheep breeding pay in Ohio? In answer to this question, I will say that, if it does not, there is no system of sheep husbandry that will pay in Ohio. But I have no doubt the question is asked in view of its relative profits, compared with the growing of other sheep in this State at the present time. A trial of three-fourths of a century ought to have tested this question pretty thoroughly. In 1801 Seth Adams, of Zanesville, Ohio, imported a pair of Spanish Merino sheep from France into this State. What afterwards became of them we can learn but little. In 1793 Wm. Foster, of Boston, imported three sheep from Spain into that city, which were given to a friend, who killed them for mutton. In 1802 Col. Humphreys, our Minister to Spain, brought home with him ninety-one head. In 1803 a few were imported into Philadelphia; and in 1809–10, Mr. Jarvis, the American consul at Madrid, brought home with him 3,850, and subsequently about 5,000 were imported by other parties, which has laid the foundation of our present flocks of fine-wool sheep. In Ohio our soil, climate, and condition of agriculture is peculiarly adapted to this race of ovine animals.

A nobler race never existed than the American Merino. They are to other sheep what Shorthorn cattle are to the other breeds in this country; possessed with the superior power of transmitting their excellence in the highest degree to other breeds with which they are crossed. These sheep are large, symmetrical in form, having robust constitutions, and thoroughly covered with a dense, and valuable fleece, and no others yield a greater per cent. of profits in dollars and cents than the American Merino. With a fleece weighing from eight to thirty-five pounds of wool, and carcass for mutton weighing from 125 to 150 pounds, quite as good as the best varieties of strictly mutton sheep, and when crossed with other breeds are surpassed by none, save only the Southdowns. Nearly three-fourths of the wool now being grown from these sheep, is long and fine enough for combing purposes, and fine enough for all card goods, except the finest broadcloths and a few other very fine goods. Well were they worthy the first prize awarded them at the World's Exposition at Hamburg. These wools supply nine-tenths of all the card or clothing wools consumed in American mills. The American Merino grows a long, fine, dense fleece, with the outside surface so compact as to exclude the cold and storms, and when bred with care are a hardy sheep, well adapted to every variety of climate on the American continent, which you can say of no other race. More than three-fourths of all the wool consumed in this country is from the Merino and their crosses, and quite all the mutton that is shipped to the cities is from the Merino or crosses of this breed. These sheep are annually shipped from Ohio and other States to Texas, New Mexico, Colorado, Wyoming, and California, to cross upon their inferior breeds, and the result has been astonishing. Of the thirty-six millions of sheep in the United States, California has now over six and a half millions, and is now the first wool-growing State in the Union. While sheep and wool-growing has decreased in the older States, it has increased beyond calculation in the Western States and Territories; and to-day Merino wool is for clothing what wheat is for food; it is the chief material for cloth at the present time, entering into the coarsest as well as the finest. While the softest, it is the strongest of all wool fibers; from the number of its filaments which may be spun in a yarn of a given diameter; from its fulling and spinning qualities, or what is called its carrying power. It is the best adhesive for the cheaper fabrics, such as coarse wool, cotton, or shoddy—the mixture of Merino wool increasing indefinitely the material for cheap clothing.

Abundant Merino wool is the greatest boon the world has received from the animal kingdom, and the day is not distant when it will dethrone King Cotton in this country, and be king over all American products. "The Golden Fleece" will soon be the flower and strength, the blood and revenue of this country. It will contribute more to the comfort, happiness, and wealth of our people and the nation than any other product of Mother Earth. The question is often asked why we do not grow more Saxony and Silesian wools, such as are in request for the finest broadcloths. It is not because these sheep do not do well here, for there is no place on the globe better adapted to them than portions of Ohio. The reason is found in the fact that wool-buyers do not pay enough to encourage the growth of these wools, compared to what they pay for other varieties, they are not as large and heavy shearing sheep as the American Merino.

It is admitted that these wools are indispensable for making the finest broadcloths, flannels, shawls, French Merinos, thibets, felts for pianos, jewelry work, and many other novelties. In conclusion, the question may be asked as to the future prospects of fine wool sheep breeding in Ohio. In reply I will say, that the business has its ups and downs like every other business. In 1868 we had seven and one-half millions of sheep in our State of all kinds, to-day only three million nine hundred thousand six hundred and four, which have mainly descended from the Spanish Merino families. While we have less sheep by one-half than we had in 1868, our falling off in wool is less than one-third, though we may never again keep as many sheep as was in Ohio in 1868, this industry being stimulated by the abnormal demand for wool to clothe the army in the late rebellion, yet as our population increases, the demand for these sheep and these wools will likewise increase. The western States and Territories will draw upon Ohio for stock sheep with which to improve their inferior animals, and none will do it more speedily than the Ohio fine wool flocks. Below I append the price of Ohio medium wools in Boston for fifty years, averaging about forty-two cents per pound, while to-day the so-called half-bred wools from a cross of the American Merino with Cotswools and Leicester sheep bring five cents more per pound than the wools from the pure Leicester and Cotswool sheep, these wools being in demand for worsted coatings and for certain classes of dress goods. The deficiency of superfine wools in this country is quite limited, and we have a partial deficiency of English combing wools. We grow no carpet wools; these are grown in barbarous countries, and all but the latter may be profitably grown in Ohio. The foreign demand for mutton is rapidly on the increase. We shipped from Boston alone from January to July 1, 1878, 8,163 sheep, and in one year 272,000 sheep and lambs were slaughtered at Brighton. During the last week in October, 1878, there arrived at Liverpool from America 6,509 sheep, and 535 carcasses of mutton. I think I have shown that fine wool sheep breeding will pay in Ohio, not only for the improvement of other breeds, but in profits in dollars and cents compared to other varieties, for in Ohio we must keep large flocks on our grazing lands for a number of years, and it is an admitted fact that no sheep do so well in large flocks as the fine wools. Finally, our aim should be, in the future as in the past, to increase the quantity and improve the quality of wool, and the flesh producing aptitudes of our cherished American Merinos, that we may challenge the world to produce a better ovine animal. Let it be said of our sheep as it has already been of our wool, "that none others surpass those of Ohio." We export no wool and ought not to import a single pound, and were we represented in Congress by the right kind of men, the day would not be distant when we would grow all the sheep and wool necessary for home consumption and have a surplus to export, thereby enriching our farms, adding wealth to our people, prosperity and independence to our country.

WHAT IS THE REQUISITE EDUCATION FOR FARMERS' SONS?

PAPER BY MAJOR J. M. MILLIKIN.

MR. PRESIDENT: I respond the more cheerfully to the invitation, to open the discussion upon the question of "what is the requisite education for farmer's sons?" because of the intrinsic importance of the question itself, the diversity of opinions entertained, and the prevalence of some peculiar proceedings which I believe to be not only erroneous but mischievious, and well calculated to do infinite harm.

It is not to be disguised, that very radical and extreme opinions are entertained by some persons connected with agricultural education. They are not only held, but they are sometimes expressed with a confidence and a pertinacity that is indicative of an exceedingly illiberal if not intolerant spirit. And it so happens that the more dogmatic the opinions expressed upon this subject, as upon many other grave topics, are pronounced by those who are neither qualified by high attainments, rich experience, nor wide observation, to give an enlightened and trust-worthy opinion.

Without assuming to have any superior qualifications for arriving at a sound conclusion upon this question, yet, as I have for many years had very decided convictions in relation to it, I will endeavor, with becoming frankness, to present them to the fair-minded intelligence of this Convention.

The kind of education requisite for farmer's sons, which we are invited to consider, I take it for granted, refers to a higher, to a collegiate education. The presentation of this question was surely not intended to invite a discussion upon the extent to which farmer's sons should avail themselves of the opportunities afforded for acquiring an education in our country common schools. That it is advisable for our sons, and our daughters too, so far as circumstances will permit, to obtain the best education possible at our common schools, I apprehend is not at this time a debateable question. Hence the conclusion is legitimate, that the question has reference to collegiate education—such an advanced education as was strongly indicated by the Hon. Morrill, the conceded and distinguished author of the law of Congress for the endowment of colleges, passed July 2, 1862. At a meeting of the National Educational Association, held in Washington City in 1874, in response to a complimentary introduction to said association of experienced educators, he said: "But, Mr. President and Gentlemen, there is in this country an *aspiration* among the masses at the present time, *to rise* to *something higher* than can be attained at a *common school.* There is a spirit of discontent among laboring men, agriculturists and mechanics, all over our country, for some boon by which they may be able to *rise higher as men.*"

The pertinent question to be here and now considered is not, therefore, how far our sons may be permitted to pursue their studies in our common schools, but to what extent they should be afforded an opportunity, in the language of Judge Morrill, to gratify "their *aspirations* for *something higher* than can be attained at a common school," so that they may be able to rise higher *as men* among those engaged in other pursuits, callings, or professions.

The discussion of this subject *invites,* if it does not necessarily *involve,* a critical consideration of many important points which have arisen in the practical carrying out of the provisions of the law of Congress for the endowment of colleges. These institutions have been organized and put into operation in most of the States under as many dissimilar names as there are shades of opinion entertained as to some of the requirements of said Congressional law. And yet while this difference of opinion is conceded to exist, and while some things have *been done* and others *left undone,* in open disregard not only of the obvious meaning, bu tthe very letter of the law of Congress, still a most remarkable unanimity of opinion and of action has prevailed among the experienced—the practical and enlightened educators of the country. This harmony of opinion existed with such men, not only in reference to the true meaning and requirements of said law, but also as to the most efficient means of promoting the primary purposes of those who were most earnest and able in procuring its passage.

On the other hand, a popular error seems to have taken deep root in the minds of an essentially different class of educators, not pre-eminently dissinguished for either great ability or ripe experience in expounding laws of any kind. They have assumed that Congressional legislation upon this subject was instituted, prosecuted, and consummated for the exclusive benefit of farmers and mechanics. They have unalterably determined in their own minds precisely what kind of colleges should be established, and with very great self-complacency they have arrived at the conclusion that Congress had wisely embodied their beau-ideal of a college in the Congressional law passed upon that subject. They seem to be entirely oblivious to the well-recognized fact that the character and the meaning of a legislative act are to be determined by the language employed by the enacting power. They do not seem to understand that neither our wishes, our predilections, nor our judgments, be they wise or unwise, can in any degree *add to* or take from the true legitimate force of the words employed in a legislative enactment.

It may not be unprofitable for us to devote a few moments to an impartial examination of this much misrepresented Congressional law, so that each of us may not only understand the true meaning of the letter of the law itself, but that we may have some clear comprehension of the aims and purposes of Congress in the passage of said law.

After stating that "the leading object shall be, *without excluding* other *scientific* and *classical studies*, and *including* military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts," Congress proceeds to state in most unmistakable language the reasons which induced the passage of such a law; to give the ends, the purposes sought to be accomplished, and specifies with perfect clearness that this teaching is to be given "*in order to promote the liberal* and *practical* education of the *industrial classes* in the several *pursuits* and *professions of life.*"

And is it not marvelously strange that among men of fair intentions, and of even ordinary intelligence, that there should be any difference of opinion—any misconception of the high aims and noble purposes of said law? The intent of the law is expressed in as lucid and unambiguous terms as the English language will permit. That purpose is to promote the *liberal* education—not a narrow, not a contracted, not a meagre, nor a mean education, but a *liberal* education, one bestowed with a liberal hand; and a *practical* education, capable of being turned to use, so that the fortunate recipients of such a boon may be, as Judge Morrill has happily expressed it, able "*to rise somewhat higher as men;* not as farmers merely, not as mechanics, nor of others, however employed, but *as men liberally,* practically educated; made thereby competent to engage in any of the many varied and inviting pursuits and professions of life, as duty, necessity, or taste may incline or constrain them to pursue.

And yet, notwithstanding all the fullness, completeness, and force of the language quoted, there are some who persist in insisting that, because the teaching of "the *branches* of learning relating to agriculture and the mechanic arts is to be a leading object" in said colleges; that, therefore, *no other scientific* or *classical studies* shall be *introduced*; and that military tactics shall be utterly ignored. And this profound conclusion is announced, while the law positively and specifically provides that *other scientific* and *classical studies shall not be excluded,*" and that "military tactics *shall be included* "

There is no denial from any quarter as to the requirements of the law to teach the branches relating to agriculture and the mechanic arts. Upon this point the law is not only specific, but imperative. While this is conceded, the law is equally clear and peremptory in requiring that "*other scientific and classical studies shall not be excluded.*" This negative, pregnant with an affirmative, is equally positive and equally imperative in forbidding the *exclusion* of other scientific and classical studies. For when the law says you *shall not exclude,* it commands that you shall *include.* There is no possible way of escaping from this legitimate, logical, inevitable conclusion. There is no devise among men, no mystifying, special pleading, no cunningly concocted sophism, pretext, or excuse that can be suggested, which can release those in authority from the clearly and well defined obligations imposed by said law, to *include* the teaching of those branches of learning which Congress expressly declares *shall not be excluded.*

And yet there are those who officially resist, disregard, and contemn the plain commands of this law, and refuse to have taught "other scientific and classical studies." Nay more, in two States, possibly in more, military tactics are *not taught* in these colleges, notwithstanding the law requires that they shall be taught! A mandamus from some high judicial authority, might be wisely invoked to teach men submission to the laws that be.

Such stubborn perverseness in the open violation of official duty, such ignorance and judicial blindness in reference to the simplest and plainest provisions of law, furnish the most convincing evidence possible of the necessity of affording to all classes a more liberal education, so that they might be able to rightly comprehend the meaning of language which "a wayfaring man" ought not to misunderstand.

The class of gentlemen to whom I refer, seem to be apprehensive that the rights of farmers (for no man is to be found clamorously advocating the rights of the mechanic), are to be ruthlessly invaded, and hence they must insist upon excluding every branch of learning which, in their enlightened judgment, do not have an immediate relation to agriculture. Surely there is no ground for such an apprehension. So far as I am advised, no man who has taken any interest in this educational movement, has ever intimated that the law did not require the teaching, fully and thoroughly, of all the branches of learning relating not only to agriculture, but to the mechanic arts. There has been not only no complaint, but no ground of complaint in any part of the country, so far as I have ever heard, that these branches have not been liberally, carefully, and thoroughly taught to the extent of the wants, the wishes, or demands of all students seeking instruction in any department of agricultural learning. If, therefore, students of agriculture are receiving adequate, acceptable instruction, why should any mischief-maker be so illiberal, so much the dog in the manger, as to complain that instruction is given to other persons in other branches of learning, especially when the law of Congress positively requires that it shall be given? Can it be possible that any portion of our people desire to have an exclusive monopoly of governmental munificence? Especially so when their privileges, their opportunities, are not in any manner interfered with, disturbed, or abridged by any attentions or benefits bestowed upon others?

If the proscriptive views of these exclusives are to prevail, most manifest injustice will be done to all classes of our people who are neither farmers nor mechanics. While I frankly concede that legislative bodies are not always wise in their proceedings, nor always governed by the highest or purest sense of justice, yet, fully realizing all their manifold deficiencies and imperfections, I cannot bring myself to the very disparaging conclusion that Congress, on such a measure, could possibly be guilty of such stupidity and such gross injustice as to pass a law appropriating, with a profuse liberality, *millions of dollars worth of public property* for the endowment of institutions for the special, exclusive education of *only two classes* of our people, while all other classes, of equal worth and possessing equal claims upon governmental benificence, were to be practically excluded from all the benefits resulting from such legislation.

That is precisely the unenviable position in which these exclusives desire to place all persons seeking intellectual culture who belong to neither favored class. Such unjust, unwarrantable favoritism, such odious discrimination in favor of *two classes* of our population, and against all others, could receive no endorsement from men of enlightened understandings, and with a proper appreciation of either *public rights* or *public justice.* Such a law would be in open, flagrant violation of the equality of rights which our citizens are supposed to possess. It is not to be presumed that any member of Congress, in voting for this law, ever supposed that he was about to deny to any citizen the common claims, the common rights of all our citizens to participate in the benefits purchased with the common property of our whole people. Such odious class legislation would have been at once denounced as being in opposition to the true spirit of our democratic-republican institutions. Such legislation was never contemplated, was never consummated. Congress would not presume to make grants of land to endow colleges for Methodists and Presbyterians, to the exclusion of all other denominations or classes of people.

Neither has she conferred superior privileges or advantages upon farmers or mechanics, and excluded all persons engaged in other pursuits or professions.

There are also some economical and prudential considerations which cannot be overlooked, in addition to those indicated, why no one seeking instruction of any kind should be excluded from the benefits of our congressional colleges. To teach scientific and classical studies in connection with agriculture and other branches, will add but little to the current expenses of a college. So, too, the increased number of students, consequent upon teaching "other branches of science and literature," will increase the expenditures to a very limited extent. Two hundred students in the various departments of a well organized and properly equipped college, can be taught for within a fraction of the same amount of money that would be required to instruct half that number.

These considerations, and others of like character and significance, demonstrate the wisdom as well as justice of Congress in providing amply for the *liberal* and *practical* education of all our young people, in whatever department of learning they may desire to obtain instruction, and to what extent soever they may be able to pursue their studies. For I desire to repeat, *with emphasis*, that the law of Congress gave no superior privileges, no exclusive rights to any class or classes. It created no monopoly, no privileged classes, but by its broad, catholic, comprehensive, just provisions, secured equal rights of instruction to all classes of our people.

There are, however, some well-intentioned gentlemen who, without giving a careful, critical examination of the precise language of the law; who, with amazing facility, have jumped to the happy conclusion: First, that the intention of Congress was not to increase the number of scientific, classical, or literary colleges; and, second, that to permit "other scientific and classical studies" to be taught in the congressional colleges, would increase the number of such institutions; therefore, Congress did not authorize the teaching of other scientific and classical studies in said new institutions!

Now the foregoing is a literal, exact specimen of the *nonsequiter* syllogistic arguments used, which are supposed to be entirely conclusive. That which was to have been proven, that Congress did not intend to increase the number of colleges for teaching the sciences and general literature, our logical friends have taken for their first predicate, and their second predicate they have not proven, for the reason that it was not true. The colleges existing anterior to 1862, *did not even pretend* to teach the branches of learning specially relating to agriculture and the mechanic arts. Those organized under the congressional grant are required to make the teaching of those branches a leading object. Hence there is neither truth nor logical conclusion in this supposed argument, sometimes made to support the idea, the violent presumption, that Congress *did not intend* to provide for teaching scientific and classical studies in said colleges.

While the gentlemen, to whom I have referred, have assumed to be very strict in their construction of said law of Congress, so as to *exclude* not only *studies*, but *students* from said colleges, yet they have been driven, in order to carry out their peculiar views of a purely agricultural college, to become exceedingly latitudinous in interpreting said law. Let us give heed, briefly, to the novel schemes of education which they have inaugurated, so that we may see in what absurdities and inconsistencies men become involved while prosecuting impracticable schemes.

In the first place, we are struck with the remarkable ability manifested by these learned gentlemen in organizing—in establishing "departments" and sub-departments in their purely agricutural colleges. They have, in addition to the common departments, established a "musical department" and a "sewing department." Then instruction is given in "domestic economy," in "household chemistry," in "household economy." Then a course of instruction is provided, which is purely agricultural and mechanical, to be taught in a "*kitchen laboratory.*" This laboratory, let it be well understood, is no common, plebian kitchen; it is an agricultural, mechanical "laboratory," where unscientific, common scullions are not permitted to ply their menial vocations. This laboratory is redolent with the fragrant exhalations given off while interesting processes are being conducted by the professor of "household chemistry." In all these several departments instruction is furnished liberally. In the "musical department' instruction is given on the piano, on the organ, on the guitar, and in vocal music; the fiddle and the banjo, I am sorry to say, are excluded. The intimate connection between the study of these branches of an accomplished agricultural education and horny-handed agriculture, I have no doubt, will be readily perceived.

In the department of "domestic economy," the female farmers and mechanics receive very full instruction in said "kitchen laboratory" in the most modern chemical processes used in "*dish washing*" and the most artistic mode of "*potato peeling.*" As an encouragement for pupils to diligently apply their whole minds to the study of these *branches* of learning, it is authoritatively announced by the president that, "after a girl has learned to *wash dishes* and *pare potatoes*, she will not be kept everlastingly at either.' Afterward, by way of variety and to relieve the mental exhaustion of the fair pupils, they recreate by engaging in "scroll sawing" and in "*fancy wood and ivory turning,*" evidently for the additional and very kindly purpose of enabling them to *saw out* and *turn out* interesting toys to keep restless or unruly children quiet. In the "sewing department" we are informed that the instruction is full and complete, and includes all the "work of the dress-maker and the milliner." Superadded to the foregoing interesting branches of agricultural learning, the young ladies are to be taught the hidden, mysterious ways of "*poultry raising*" and "*bee keeping.*"

In another purely agricultural college, where "the other scientific and classical studies" mentioned are indignantly rejected as having not even a remote connection with agriculture or mechanic arts, young women are taught "house furnishing," the mysteries of "cooking," "the management of help," "*care of the sick,*" and, finally, "*the training of children!*"

And here I must be permitted to say that there is a very embarrassing omission on the part of the officials connected with the last college referred to. They have not informed the interested public how or where the dear children to be trained are to be provided. We understand perfectly how *subjects* for the surgeon's dissecting-knife are obtained; but where these tender, *living subjects* are to come from, and which are to be *medicated* and *nursed*, and then put through a *course of training* in conformity with agricultural science, we are left wholly in the dark.

The introduction of such alien, incongruous, inappropriate matters into an agricultural college reminds me of what transpired some fifteen years ago in an agricultural convention held in this chamber. The acceptance of this congressional grant and the question of the speedy establishment of an agricultural college were the subjects under discussion. A very worthy and enthusiastic friend of agriculture earnestly insisted that we greatly needed an agricultural college, for, said he, there is not one man out of ten that knows how *to pail a cow!*

But seriously, gentlemen, is it not a reflection upon the intelligence, the common sense of those who prescribe and enforce such teachings of inappropriate things, when the law is so plain in its language and so clear in its meaning. Nothing but an intense narrow-mindedness, a selfish and illiberal spirit, and a total want of any proper understanding and appreciation of the "great boon" secured by this law, have caused such puerilities to be perpetrated in the name of agriculture and the mechanic arts, and against the conceded equal rights of others who may have an ambition, an aspiration for such a higher education as will elevate their standing and promote their usefulness *as men.*

I have already given you the words of Judge Morrill, uttered some eleven years after the passage of said law, and I wish to supplement it with another extract from the same address: "Allow me to say that it has been my ambition, in the little that I have been enabled to do, to give to a *large number* of men an opportunity to develop *their full* intellectual *vigor and strength*, and thus become of greater *value to themselves* and *the nation.*"

From this, the wide difference between these broad, liberal, and statesman-like views upon this educational measure, and the illiberal opinions of a small class of exclusives' is easily seen. He is for the education of all men *as men;* they would instruct the few solely to make farmers and mechanics. He is for the fullest development of all the *vigor and strength* of the *intellectual man;* they would not develop by enlarged culture, but they would *dwarf, repress,* and *limit his capabilities.* He would provide such an education as would make men not only of value to *themselves*, but to the *nation;* they would give a special, a restricted education, not to exalt, not to make men useful *as men*, competent to adorn public and private stations, but to fit them solely for doing the work of the farmer or the mechanic.

I repeat, Congress never contemplated such an insufficient and limited education as these men delight to press on public attention. To prove this, I have already given you the more recent statements of Judge Morrill as to the intentions of Congress. If any man, who had any agency in the enactment of this fundamental, organic law, from its conception to its final passage, became thoroughly familiar with the controlling considerations for its enactment, it was Judge Morrill. Therefore, I beg the privilege of strengthening—of fortifying—the view of the law which I have presented, by quoting from his speech, made in the House of Representatives on the 6th of June, 1862, when this Congressional measure was under discussion:

"This bill proposes to establish at least one college in every State, upon a sure and perpetual foundation, *accessible to all*, but especially to the sons of toil, where all the *needful sciences* for the *practical avocations of life* shall be taught; where neither the *higher graces of classical studies*, nor that military drill our country now so appreciates, will be entirely ignored, and where agriculture, the foundation of all present and future prosperity, may look for troops of earnest friends, studying its familiar and recondite economies, and at last elevating it to that *high level* where it may fearlessly invoke comparison with the most advanced standards of the world."

These words, from an authority so eminent and so reliable, uttered on the floor of Congress but a few days before the passage of the bill, considered in connection with his subsequent statements, fully prove the purposes of Congress in the enactment of said law. They settle indisputably all controversy as to the full scope and comprehensiveness of the instruction which was prescribed, and which was to be *accessible to all.* Not only were *all entitled* to the advantages of the instruction, but that instruction was to include "*all needful sciences,*" and all the "*higher graces of classical studies.*" How admirably does this setting forth of the purposes of the bill, when under discussion, harmonize with the obvious, natural meaning of the language of the law itself, and which has been recognized in most of the States of the Union by those in authority.

And now, the question has doubtless already arisen in the minds of many gentlemen, what necessary connection is there between the proper meaning of said law of Congress and the question as to the requisite education of farmers' sons? I have not apparently wandered from the immediate question without a purpose, and I will endeavor to respond to the inquiry. *First,* I answer, as the education contemplated for farmers' sons is manifestly collegiate, it is entirely proper that we should understand the true meaning—the practical import—of the law of Congress. *Second,* when said law is rightfully construed, I believe that it prefigures, indicates, prescribes, and provides for, just such a course of instruction as is requisite for farmers' sons. For reasons which are abundant and controlling, I believe that such sons of farmers as can find it convenient or possible to do so, and indicate the possession of adequate intellectual ability, should be taught not only the branches of learning specially relating to agriculture, but other branches of a liberal education, even to the acquisition of the "*higher graces of classical studies,*" as they are now taught in the better institutions established under our Congressional law.

And just here it may be pertinent to inquire how many farmers' sons, for instance in Ohio, can be reasonably expected to enjoy the great boon of a collegiate education? This is an interesting and important question, and has much to do with the subject under discussion. There are many who have ascribed a most marvelous talismanic power to agricultural teaching in the colleges established under the new dispensation. They seem to have taken it for granted that every farmers' boy is to go to these agricultural colleges, and after a brief season devoted to elementary instruction in agriculture and kindred literature, that he is to come speedily forth profoundly taught in all the occult mysteries connected with the heavens above, the earth beneath, and the waters under the earth, and that without the aid of collateral teachings or experience, he is not only to know every thing pertaining to vegetable life and animal life, but he will be able to make *ten blades of grass* grow luxuriantly where only one starveling existed before.

Let us see what warrant men have for indulging in such extravagant anticipations, either as to the number of farmers' sons to be taught, or the usefulness of the teachings. In Ohio there are to-day not more than 30,000 young men between the ages of 15 and 21 engaged in agriculture. In 1870 there were 28,069 between the ages of 10 and 15. As our agricultural population has increased but little, if any, the probabilities are that we now have only about that number between 15 and 21. To be abundantly safe, let the number be put down at 30,000.

How many of these 30,000 will be permitted to enjoy the advantages of collegiate instruction? In the United States in 1876 there were of all classes of students only 56,481; and in Ohio there were only 2,220, *males and females*, and 1,271 *of our sons*, old and young, farmers and others, receiving a superior education in all the colleges of Ohio.

From this data the conclusion is fairly deducible that there is not more than the *one-twelfth* or at least the *one-tenth* of the above 1,271 students who were the sons of farmers—boys from the country—pursuing collegiate studies with the view of engaging in any of the reputable and lucrative and inviting employments that may offer.

And from these facts you can make your own estimate of the probable number of farmers' sons in Ohio who will seek a collegiate education, that they may be the better prepared to prosecute *their farming operations.* Put it at any number from fifty to one hundred and twenty-five, as these figures and your personal knowledge and observation may suggest, and I will not dispute with you upon the estimate.

These facts give us an insight into the present demand for collegiate agricultural education in Ohio, and thereby we can approximately estimate its condition in all the States. Now, I confess that a very careful consideration of the foregoing facts does not afford much ground for congratulation to those who desire and are willing to labor for the elevation of our farmer population in everything that will augment their power, give them greater influence, and make them more efficient and useful in private and public life.

The opinions we may entertain as to the most suitable or appropriate education for farmers' sons, and our estimate of its value, will be greatly controlled by the peculiar ideas we may entertain as to the position the farmer should occupy, not only as a farmer, but as a citizen, as a parent, and as a member of the body politic. If he is to be nothing but a hewer of wood and a drawer of water, we need give ourselves but little concern as to the quality or completeness of his education.

Highly as I esteem the farmer of knowledge, of practical experience, and general intelligence *in his profession*, I esteem him infinitely more highly for his attainments, his sterling good qualities, and his accomplishments *as a man*. While it is greatly to be desired in agricultural life that the farmer should have a competent and practical understanding of the business of his calling, and that by his intelligence and worth that he should be able to magnify his vocation and to make it not only profitable but honorable, yet it is a matter of equal moment to him personally, to his family, to the community in which he lives, and to his State, that he should be an upright, cultivated, conscientious man, and that in all things in social life and in business life he should employ all his capabilities, so as to elevate himself, and all those within the reach of his personal influence, to a more honorable and a more elevated position.

While in the farmer's life, *as a mere farmer*, profitable results are greatly to be desired, yet men do not live by bread alone. The chief end of man's creation is not to be found in husbandry. While it is the duty of the farmer to make himself intelligent and useful in his vocation, yet I apprehend that he may rightfully entertain even higher aspirations, and is entitled to countenance and assistance in his efforts to accomplish whatever he can for the increase of public and private virtue, and the promotion of the public good.

Hence while I believe that even a meager, limited, special education will accomplish some good results, which, I fear, are greatly over-estimated, yet to develop their higher powers, their superior qualities and capabilities, it is a matter of the highest importance that the sons of farmers should be afforded the best opportunities possible for the acquisition of a thorough, comprehensive education, precisely such an education as the congressional law prescribes and provides the means for establishing, and which education has been fully recognized and approved as the best by the most practical, the most experienced and successful educators of the country.

But why do I, as a farmer, insist so earnestly upon a superior higher enducation for the sons of toil who make their homes in the country? I answer, Because I wish to exalt their position; I wish to magnify their power, their influence among men, in every department of life. For I hold that the broader, the more full and complete, and the more versatile the education of the farmer's son shall be, the more useful and efficient, other things being equal, he will be in his sphere and in his labors as a farmer. This is so in every other pursuit of life.

It is not enough for the physician to understand anatomy, materia medica, the pathology of diseases, but he should acquire, besides, a knowledge of chemistry, of botany, and other kindred subjects that would make him better prepared to understand not only the nature of all diseases that human flesh is heir to, but that he should be thoroughly familiar with the active qualities of the remedial agents he may employ.

So, too, the study of Blackstone, Story on the Constitution, Chitty on Bills, and Swan's

Statutes does not make a lawyer. He must be well-grounded in more things than mere legal lore, if he hopes to rise to a higher position than that of the most pestiferous nuisance of the country—a pettifogger. The more thorough, the more extended and varied his knowledge may be in every department of learning connected with the administration of public justice and the enforcement of private rights, the more efficient and conspicuous he would become in the work of his noble profession. Superadded to these qualifications, he should be familiar with the history of jurisprudence, and well-trained in logic, rhetoric, and every classical accomplishment that would augment his power and give him influence in the performance of his professional duties.

The young farmer, however, is to have no such corresponding aids in procuring an appropriate education. The popular clamorous idea of a collegiate agricultural education, with those that cry aloud and spare not, is that it is to be acquired in a brief period, without sufficient primary preparation, without instruction in collateral branches of learning, and even without any general culture, so necessary in the successful prosecution of studies in any department of learning. Such a course of instruction will never make well developed representative farmers. This special, pinchbecked, agricultural education wi'l avail but little.

While I concede that the young farmer, possessing more than ordinary intelligence, may sometimes be benefited by even a limited, a special education, in matters pertaining to the business of the farmer, yet the more important principles connected with agricultural science can only be thoroughly understood by those who have devoted their lives to the professional investigation of every branch of scientific learning, mediately or immediately, connected with agriculture.

It is with the well ascertained and well settled *results* of scientific investigation that farmers, as a class, will be called upon to accept and to put into practical use. They cannot conduct chemical analyses either profitably or reliably. Professors who have devoted their lives to scientific investigations in their thoroughly equipped laboratories, with ample time, means, and facilities at their command, must be relied upon for the development and illustration of scientific principles, and the circumstances under which they are to be applied in the practical operations of the farmer.

Hence, we want men of general culture, of a "liberal and practical education," or, if you prefer it, men *with a general purpose education*, in preference to those who possess only a limited special education—a mere smattering of scientific learning—and who are deficent in other indispensible attainments.

But there are weightier, more controlling considerations than those referable to mere success, why farmers' sons should receive a superior education. They need it for its intrinsic positive worth, for the personal comfort it imparts, for the strength of character it bestows, for the promotion of their prosperty in business affairs, for their advancement in social culture, and the protection of their rights and privileges as citizens.

The signs of the times are ominous, giving unmistakable indication of the existence of disturbing elements of a most inflammable character. The peace and safety of society have already been assailed. The rights of citizens, as assured to all in our State Constitution, which provides that our people "have certain inalienable rights, among which are those of enjoying and defending *life and liberty*, *acquiring*, *possessing*, and *protecting* property," have been defiantly violated by infuriated mobs. This hitherto regarded *inalienable right*, is impudently denied. The combined power of disturbing elements found in Trade Unions, in Socialistic, Communistic, and Nihilistic brotherhoods, of foreign importation and of domestic growth, not only assail the rights of property, the family relation, the sanctity of the Sabbath day, but the sacredness of every institution which has heretofore been regarded as of priceless value to a Christian people.

The fierce and infidel results which are impending must be vigorously resisted. But by whom? Not by the law-abiding, virtuous citizens of the cities in which all these atrocious schemes and combinations for the violation of public and private rights are concocted and organized. They are powerless to subdue these evil doers who are continually warring against right and justice and the welfare of society. To the farming population of the State we must look for the resisting, the protecting power, against all the dangers which threaten us. *That population* is the great *conservative power of the land.* It, in cō-operation with good men everywhere, can conserve the right to *acquire* and enjoy property; it can preserve the family relation, the Sabbath, and all the religious and educational institutions of the land. So, too, in politics; the purifying, conservative power is to be found among the law-abiding citizens of the country. This population is entitled to a largely increased, if not to a preponderating influence, in all public affairs. It shoudl occupy no subordinate position in the *civil*, in the *political*, in the *educational*, and in the religious enterprises of the day. We need this power in the halls of legislature. We need it everywhere. And how shall it be made most efficacious, and how shall we attain power and influence commensurate with its numbers, its productive ability, and its wealth? I answer by the full development of the intellectual vigor and strength of the youthful manhood of the country, so that it may be prepared to maintain, by word and deed, the rights and interests of all classes of our people, and repel and utterly defeat the wicked purposes of those who would disrupt the very foundations of society and destroy all the cherished institutions of the land.

The President. The next thing in order is the topic, "The Relations of Science to Agriculture." Prof. Orton was appointed to speak on this, but I am informed that he is not present; therefore, it is open for general discussion.

M. B. Bateham. I am asked if I will respond to this. My objection to doing so is that it is a question that certainly ought to be carefully written out. One cannot speak upon it and do it any justice without preparation. And, besides, our time is precious and short, and this can be written out and published in the annual report, where we shall all read it. Therefore, I would suggest that it be passed, and other topics taken up in its place.

Mr. Lawrence. Gentlemen of the Convention, as Secretary of the Ohio Wool Growers' Association, which held its annual meeting last night, by an almost unanimous vote I was instructed to lay the following resolution before this body, to-day, simply acting as their agent:

Resolved, That the Ohio State Board of Agriculture be petitioned to revise their premium list for the coming year so as to offer no premiums on live stock owned wholly or in part outside the State of Ohio.

Major Millikin. I move that it be so amended as to read that the State Board be requested to consider the propriety of so doing.

W. B. McClung. If I understand you, if we pass this resolution now, with that amendment, it will go to the State Board of Agriculture for their adoption from the Convention.

The President. For their consideration.

Mr. McClung. I should be very loath, so far as I am concerned, to have it go to the State Board, if it would indicate that Ohio would put herself in that sort of a positiion.

As an Ohioan I am of the opinion that we can well allow any competition to come that exists or that can be found. And the adoption of this resolution would be placing ourselves in a position that would not only be objectionable to ourselves as citizens of the State, but destructive to the interests of the fair itself.

Now, there may be something back of this that I know nothing of, and I was in hopes that the gentlemen would have explained this so that we can know what is intended. I believe that there are animals outside of the State that are more perfect than ours, and that it is an advantage to have them come into the State in competition with ours, so that we can profit by it. I am only in favor of doing that which will bring about an improvement in our stock. So far, I am not able to see any good result in it, and must vote against the resolution and amendment.

MR. LAWRENCE. I would like to state, as a matter of explanation, that I was simply acting as agent for the Ohio Wool Growers' Association—acting under their instructions, and there are members of that Association present whose duty it is, I think, to explain this matter before the Convention. It does not belong to me.

J. O'B. RENICK. I would like somebody to explain this matter.

W. B. MCCLUNG. We have quite a number of questions of interest here that will consume much time, and, to test the sense of the Convention, I move that the resolution be laid upon the table.

J. C. STEVENS. Mr. President, I would like to offer a few remarks before the vote is taken. I think I know the object of that resolution. I know—I think—that the intention was simply to bring the matter to the attention of the State Board of Agriculture.

The injuries arising from this foreign competition applies equally to other stock in Ohio. My impression has been, and is now, that it might be well enough when the State Board is revising its premium list to allow foreign stock to come into competition for sweepstakes, but not to come into competition with the classes. I have thought for years, and it is my experience, that the present arrangement is bad. Now, many of us know, and quite a number know quite seriously, too, that they cannot afford to put their herds of cattle or their flocks of sheep in condition to be successful competitors. They cannot put them in a condition that will enable them successfully to compete with parties who exhibit from outside the State at our fairs. Last year, at our State Fair here, there was a herd of cattle, if you remember, that took the first premium, and there are hundreds of cattle in Ohio far superior in point of merit. There are hundreds of cattle, I say, that we would pay more money for. Now, there has been, also, the same objection as to over-feeding and over-pampering on the part of Ohio breeders that there has been with foreign men who come in and compete for the premiums, but not to the same extent. You know that in 1876 there was a herd of cattle that started from Kentucky and stopped at several of the local fairs before they arrived at the Ohio State Fair, all fixed up for premiums, fattened, groomed, oiled, horns filed down and smoothed up in nice fix for show. They came here and took the premiums at our fair, went to the Centennial, to the Northern Ohio Fair, the Southern Ohio Fair, and all over the country; and when these cattle were put upon sale there were but very few that realized as little money as those seven head that were exhibited and took the premiums all over the country. There was only one that brought over the average, of twenty of the lower that were upon sale where there were one hundred and twenty odd head.

Now, we ought to encourage home breeders, and we ought to encourage honesty, and we ought to encourage the improvement of the stock of Ohio, and not offer rewards for rascality and dishonesty in breeding. Home breeders of cattle or sheep, or exhibiters, may be easily detected and exposed in their methods of treatment and preparation for the fair; but foreigners, those from a distance, are not so easily exposed. The rules of the Board may require them to make a statement of their treatment, but in nine cases out of ten they do not get a truthful statement—"just came off the pasture; only had a little corn for a week or two." We know it is not the case. They have been fitted up for months.

The object of that resolution, as I understand it, is simply to call the attention of this Convention, and through it to the State Board of Agriculture, that if it is good in their wisdom, in revising the premium list, they will endeavor to adopt some method by which they can close the doors against these evils.

Now, for one I feel that legitimate competition and exhibition of stock from abroad may be of advantage to all, and if you would open the doors for competition upon sweepstakes, we would then have the benefit of a comparison of stock, and a sufficient reward offered to secure their exhibition at our fairs.

L. P. **Harris**: I don't intend to occupy the attention of the Convention to make a speech, but only so far as to say that this seems to me a matter of some importance. I understand that the motion now is to lay the resolution upon the table. I want all to think carefully before they vote upon this question. It is called the Ohio State Fair. Now, if it is a United States Fair, why call it the Ohio State Fair? It is intended, I believe, to do the greatest good to the greatest number. Well, now, if you let that class of stock come in here that the last gentleman on the floor has spoken about, and truly, too, why, the great mass of the farmers of Ohio cannot get up anything of that kind. They cannot take time to scrape horns, and polish, and oil, and very few will come; and by letting in these few from outside the State, it discourages the mass of the farmers of Ohio, the very ones we want to encourage, so they won't try to compete, from the fact that they cannot afford to get up something nice at a great expense, simply to exhibit once. For these reasons I shall vote against laying this resolution on the table, and if I get an opportunity shall vote for the resolution.

W. B. **McClung**: Perhaps it is not proper to discuss this question under a motion to lay on the table, but I would like to say a very few words in reply to the gentleman's remarks. Now, I should dislike very much for the State of Ohio to be put in the position of saying that if a man shall go outside the State for a good animal, either of the horse kind, cattle kind, or sheep kind, for the purpose of giving Ohio the most perfect animal that could be found in the United States or England, and then when it is bought and brought here and owned in the State of Ohio, that he shall be kept out and not be allowed to exhibit that animal here, when the very purpose of bringing the animal in was to perfect the breeding interests of the State of Ohio. Now, that is exactly the result that would be brought about by this resolution. Some of us remember when Daniel McMillan went into that contest, and it was the proudest day perhaps Ohio has ever had in her capital when he got up that herd that belonged to Ohio, and wiped out the Kentuckians. I think he went out of the State and got cattle to bring in here to make up that herd, and now we propose to make a rule here that we won't permit these gentlemen who are our pioneers, and who are building up and promoting the breeding interests of the State of Ohio, to do so; and we shall be in danger of discouraging them, and they will go back and cease to seek for the best stock that can be found. No, sir; let us have it that wherever you can find the most perfect animal you may get it; and if you choose to go out of the State to get it, let it come in and let it belong to Ohio, and let them exhibit sale stock.

Now, another thing that seems most objectionable is this: Certain gentlemen have found out that there is a certain set of scoundrels imposing upon and taking advantage of the people. That is a question for the State Board of Agriculture to look after carefully, and if it be true, why, that is the point to fight, and not this other. But the true policy for Ohio is, sir, to bring in the very best stock that we can possibly get, and the more of it the better. I don't want to see Ohio embarrassed in this matter at all. I don't believe that this Convention wants to see Ohio jeopardized in this matter at all. And if there has been any injustice among these judges, and in the management of these agricultural societies, that ought to be ferreted out and have a fair count. All we ask in this matter is to have a fair count, and Ohio will take care of herself.

M. J. Lawrence There is an idea in this thing that has not yet been touched upon. It is this: The object of this resolution, as I understand it, as was discussed before the Wool Growers' Association yesterday, was to do something, adopt some measure that would discourage what is known as the "professional exhibiter." It is the exhibiter who has spent a year, perhaps, previous to the fair season, in selecting and buying from all sections of the country just such a number of animals, and preparing them to receive a premium. That man goes to a great expense. Why? Because he can show at two or three fairs in Kentucky, and then can come to Ohio and show at our four prominent fairs, then go to Indiana and show at three or four fairs there, then go to Illinois, and end up at St. Louis, showing in all the fairs and taking the premiums. Why? Because when he can take this entire route he can go to an expense that is not judicious or reasonable for any breeder who does not want to go to this trouble in selecting and preparing a herd for exhibition.

Now I know that the breeders of Ohio are not afraid of the stock from any other section of the world, I don't care where they come from; but they don't like to compete with what is known as "professional show herds," that are gotten up for the sole purpose of exhibition. At the time that friend McClung speaks of, this system had not been inaugurated, and therefore this precaution was not necessary; but now it has become very prevalent. And I would call Mr. McClung's attention to the fact that he has noticed at our fairs during the past few years, four of the prominent exhibiters of Shorthorns in this State—I refer to Jones, Selsor, Montgomery, and Haggerty, I am not afraid to name them—who were the prominent exhibiters of Shorthorn cattle in our State a few years ago. Have they been during the last two years? And why not? They say they don't want to go to the expense and the trouble and the risk of preparation, because they were not going to take an extensive trip. I simply call attention to them as an argument in favor of some precautionary measure in this way; not, perhaps, that we need to exclude all the exhibiters from other States at our fairs. I know that they have been in the habit of coming from other States with live stock, and have done us good, and are as welcome to exhibit as any breeders in the State; but, gentlemen, I believe if you look at this thing in the right light you will see that there is cause for some such action.

W. B. McClung: With your permission, I would ask leave to withdraw my motion to lay on the table, and let Mr. Millikin's amendment be voted on.

Leave was granted.

The President: Will you please state your amendment?

Major Millikin: It is that they take into consideration the propriety of so doing. I want to say, Mr. President, that I do not want to see Ohio take the unusual step of prohibiting stock from other States competing at our State Fairs. It is not done in Indiana, it is not done in Illinois, it is not done in Kentucky. We shall be merely adopting a rule in Ohio that is not in existence in any other State of the Union.

J. C. **Stevens**: I think the amendment offered by Major Millikin is satisfactory to the originator of the resolution.

Mr. Griffin: I would say that we, in Butler county, have found it to the advantage of the society to throw our fairs open to the world. If they can come there and beat us, let them come. If those gentlemen have filed their horns and smoothed them up, I believe the true principle is to open our fairs to the world.

Mr. Daugherty: In Preble county we open up to Indiana, and they come there strong; and no man complains because other counties bring in better stock. And I say, when you undertake to shut the door on stock you ruin our fairs. I believe the State of Ohio can compete with Indiana or any other State.

Mr. Mack: Our fair has been almost a failure for many years; and I would say, if you debar from the State Fair stock from other States, the Tri-State Fair, at Toledo, and the Northern Ohio Fair will clean your State Fair out.

Mr. Lawrence: As far as I am concerned, I would be wholly satisfied with the amendment, but, as I stated to you in the first place, I acted under instruction from the Ohio Wool Growers' Association, as their secretary, to lay this resolution before this body, and I hardly think I would have authority to accept the amendment unless ordered by the Convention.

The vote being taken, the amendment was agreed to.

The question now being upon the adoption of the resolution as amended, the same was agreed to, and was as follows:

Resolved, That the Ohio State Board of Agriculture take into consideration the propriety of confining the competition on live stock to the State of Ohio only.

W. B. **McClung**: Quite a number of gentlemen have spoken to me in reference to the permanent location of the State Fair, and have intimated that they would like to have that question brought before the Convention.

Mr. **Tenney** offered the following resolution:

Resolved, That it is the sense of this Convention that the manner of distributing the annual State Agricultural Reports should be changed so as to cause their distribution through the instrumentality of the several county agricultural societies; and that the present Legislature be memorialized to bring about such a result.

On motion, the resolution was laid on the table.

M. B. **Bateham** introduced the following resolution:

Resolved, That this Convention ask the Legislature to repeal the present law for the prevention of fraud in the sale of fertilizers, and pass a new law which will better secure the end desired.

Mr. Bateham. I will occupy a moment in speaking of the object of that resolution. I ought to refer to the fact that the sale of fertilizers has become a very large interest, amounting, as I believe, to about $80,000 last year. There is, as many of you know, very much fraud in the manufacture and sale of this article. A law was passed last winter intended, no doubt, to prevent any such fraud, but it is fully ineffective. I will read from that statute.

SECTION. 1. *Be it enacted by the General Assembly of the State of Ohio,* That each and every person or persons, firm or house selling or offering for sale, for use in this state, any fertilizer or fertilizers, such as [bone] dust, bone flour, phosphate of lime, guano, ground land plaster, or any other artificial fertilizer, shall be required to attach to the package containing the same a fair printed analysis of the same.

SEC. 2. It shall be the duty of the professor occupying the chair in the chemical and mechanical department of the Ohio Agricultural and Mechanical College, upon application, to make and give a written analysis of such artificial fertilizer as may be furnished to him for that purpose.

The next clause provides a penalty for violating that law not less than $25 nor more than $200, or by inprisonment in the county jail.

In the first place a grand mistake is made in this law in embracing too much in the way of specifying the fertilizers. There is no sense nor necessity for including land plaster, for instance, and there is no sense in specifying phosphates of lime. We have no such fertilizers sold in Ohio or known among the dealers in fertilizers. We have super phosphate, which is another article entirely, and means something else. The law is altogether defective in these respects, and specially defective in not specifying distinctly who shall make this analysis, and how the samples shall be furnished, by whom they shall be furnished, and how the expense of making the analysis shall be defrayed. Consequently, the law has been fully unused, and ineffective entirely. That question has been asked of the authorities of the Agricultural College, whether the professor of chemistry there would be required, under this law, to make analyses, and they replied that he could not and would not do so, for no provision was made by the law for defraying the expenses of an assistant chemist necessary to do this work. These legislators certainly greatly mistook the labor and expense of making such analyses as is required to prevent fraud in the sale of fertilizers, and the determination of how much of the various elements of value there are in the samples, in superphosphates for instance. The expense of such analysis is from ten to fifteen or twenty dollars, and requires two or three days; besides the expenditure for chemicals is considerable. Now, unless the analysis is carefully and correctly made, it is comparatively useless. Phosphoric acid, which is the vital element to superphosphate of bone is most difficult to determine, and it requires skill and great niceness of analysis to determine how much there is. And hence, without provision for the expense and labor in making these analyses, they cannot be made.

Then, again, nothing is said in this law as to how many samples for such analysis shall be furnished, and who shall send them. It does not say the manufacturer shall send them, nor that the dealer shall send them, nor that the farmer who wants to use them shall send them; and hence it is left to anybody and everybody to send them and ask that an analysis be made. There may be twenty samples from the same manufacturer, from the same establishment, sent to the retailers in various counties, all of them sent in to this chemist to be analyzed, when one analysis would be sufficient, one analysis per month, for instance, for the products of one manufacturing establishment ought to be sufficient to compel them to keep their manufactures up to the standard required. And so you see the law is worthless, and altogether vague and useless.

Now, let me tell you what has been done under this law in my neighborhood. The dealers in that town, where a good deal is sold, have cards printed and attached conforming to this law. The manufacturers at Cleveland, Buffalo, Detroit, Toledo, Chicago, etc., send them little printed cards, so as to seem to comply with this law, and yet mislead completely the purchaser. It says, for instance, "This specimen furnished is found to contain 45 per cent. of animal matter," and that the mixture contains 14 or 17, whatever it may be, per cent. of phosphoric acid; and while the reader thinks that the per cent. which is mentioned is the percentage of the specimen of fertilizer furnished, it is really only the percentage, and the 45 or 50, or whatever it was, per cent. of the animal matter left out, so that, instead of there being 14 or 17 per cent. of phosphoric acid, of the whole sample you will have only about half of that amount.

But this is enough to show, I think, that the law is utterly useless, and should be repealed and a better one passed.

The vote being taken, the resolution was unanimously agreed to.

J. F. CHARLESWORTH, of Belmont: I desire to call attention to the question of the permanent location of the State Fair, and I offer, for the purpose of bringing about a discussion of the subject, the following:

Resolved, That economy will be secured and the agricultural and mechanical interests of the State society promoted by such legislation as shall result in permanently locating the State Fair at Columbus, upon the farm of the Ohio State University.

Resolved, That the State University and the State Agricultural Society be under the management of the same board of trustees or managers.

Resolved, That said board of managers be elected by this Convention, as heretofore.

MAJOR MILLIKIN: Mr. President, I have heard this question of the permanent location of the State Fair discussed for the last twenty-two years. We made an experiment by way of a compromise, by locating it at Columbus for five years. This is a scheme for the purpose of asking the Legislature of Ohio for such legislation as will enable the State Board, or rather creating a new State Board, and making the trustees of the University here the managers of agricultural affairs. It seems to me utterly impracticable. The State Board of Agriculture and this institution have no funds to use for the purpose of locating it either directly or remotely that way, and I venture that the Ohio Legislature will never consent to the use of that farm for any such purpose. I recollect that at one time some gentlemen connected with the Reform School down here wanted to have that connected with the State Board of Agriculture, and that they co-operate. As a matter of course we opposed it. How would we have carried on the business of the State Board of Agriculture in connection with the Reform School down at Lancaster? The business of education is entirely separate and apart from the carrying on of State Fairs. I don't want to see anything of that kind attempted in my day, because it is perfectly certain to be a failure. It is inevitable. Why do you want the management of the State Fair under the trustees of this University? They have got enough to do—as many duties as they want to perform without that. This organization of the State Fair has, under a series of laws during the past thirty years, grown up, and it would require a remodeling of the whole organization and association of the State Fair and of all the officers. They would have to be all changed entirely and completely.

And then, I am not in favor of the location of the fair in any place. The only true policy for running the State Fair is to rotate between Cleveland, Dayton, Toledo, etc. You can make arrangements so that it will be inexpensive to the State Board and inexpensive to the counties, and you will always have funds with which to run the State Fair. I move to lay that resolution on the table.

The vote being taken, the motion was agreed to.

W. B. McClung then offered the following resolution:

Resolved, That the interests of the State Fair will be better served by locating the same permanently atthe city of Columbus.

Mr. Tenney moved to amend the resolution by striking out the word "Columbus," and inserting the word "Zanesville."

Mr. Hill, of Hamilton county, moved to amend the amendment by inserting "Cincinnati" instead of "Zanesville."

Mr. McClung: I would say this for my friend Major Millikin, that when he was discussing the College question, and I referred to his learning, as his being a graduate of Oxford, it was not for any buncombe.

Major Millikin: That is a good commencement.

Mr. McClung: But when I had done with that congratulation, I didn't want to see him strike out in this way. You gentlemen well know that this last fall our State Fair, as well as the State fairs of other States, found themselves swamped by a week's wet weather, after much preparation and spending the substance of the people in preparation, and that destroyed the State Fair. I would like my friend Major Millikin to look back to the time when he was connected with the State Board of Agriculture, and he can remember a number of times when they had put four, five, six, seven, eight, ten, twelve thousand dollars into preparation, for what purpose? For a State Fair; and right on the heels of it came along a bad spell of weather, and destroyed your State Fair. We are following the wrong policy, and if we propose to do the same every year we shall likely bankrupt the State Fair of Ohio. Now, if there is some plan by which we can do something to avoid that, it seems to me to be very desirable. In certain States they are getting up expositions, so that in this way they need not jeopardize the expenditure of money they have made in preparation for it, nor the industries there on exhibition, nor the interest the people have taken in it, in one week when the weather may be bad and destroy the whole enterprise. Now, it seems to me that it is well worthy very careful consideration whether or not it is not a good thing to do. We cannot well afford to undergo so much expenditure as we do annually, with a great probability of its being destroyed, especially when we find other States having their choice fairs. You have to-day a debt on your shoulders; you have a State Fair that is to-day wading through trouble because the weather has destroyed your prospects; and the gentleman here says, "Let us go on upon the migratory system." Would he have us go on in this manner when this has almost destroyed our fair?

Major Millikin: How? How?

Mr. McClung. Why, sir, it is exactly like before when we started up at Dayton. The floods came and flooded the town almost, and we had to adjourn it into so late a season that it would have been a most unwise thing to have done, ordinarily, but we were fortunate and happened to have good weather at that time. If we hadn't, there would have been another failure; and so when we were at Toledo the first time, was it not a fact that it was almost a failure on account of the rain? We had only got the State Fair into active operation, and the people had come there, the rain came on, and they all had to go home without seeing the exhibits at all. The people have some rights in this matter, as well as others. The next year we were fortunate at Toledo, and had good weather and made a success of it. But suppose we had been overtaken with bad weather then, would it not have destroyed the State Fair? The gentlemen says "migrate." How shall we migrate in the face of the elements, over which we have no control?

MAJOR MILLIKIN. Have you any protection from the elements so far as Columbus is concerned.

MR. MCCLUNG. No, sir, no more than any other place, but there are questions that come up intimately connected with the question of location, and one of them is the making of an exposition, and not crowding it into a week's time. This needs to be discussed in order to determine upon the permanent location, and until you do determine upon the permanent location, you are not in a position to discuss these matters. Now take it, if you please, and let it be permanently located in Columbus, and say that it shall be turned into a permanent exposition, and instead of one week you can have two or three weeks, and excursion parties will come in from different parts of the State, and you will make a good thing of it, and the State Board will not be likely to become bankrupt. Take the Cincinnati folks, now, in their exposition. They don't propose to cram themselves into a week; and if Cincinnati, with her interests, will not, is it not about time that the State Ohio, with her vast interests, with her capital, with her agricultural and industrial interests of every kind, should have foresight enough not to concentrate them into one or two days, when, if the weather be favorable, there is a perfect jam for them and for you and your committees, and if it prove unfavorable you must pull up stakes and throw away five or ten thousand dollars?

There was true policy in the migratory system at one time. It was well enough in the first place to do missionary work between the different parts of the State; but who wants the State of Ohio, now, to do work for missionary purposes? It is too late in the day for gentlemen to talk about taking the State Fair to the different portions of the State for such purposes. Are you going to promote the interests of stock in North-western Ohio by taking it there now? They bring better stock to our fairs, now, than any other part of the State. Need you take it to Springfield, Akron, Dayton, and other towns? Not a bit of it. They go to any part of the State. Wherever the State Fair is held, their stock and manufactures go and are exhibited to the people of the State of Ohio. I tell you there has been to much of a disposition on the part of the different portions of the State that they must have the State Fair a part of the time any how. What difference does it make if you shall squander five, ten, fifteen, or twenty thousand dollars in so doing? Throw it way and start another migratory exposition the next year! That has been the disposition in regard to the fair in the past.

MAJOR MILLIKIN: It is said that circumstances alter cases, and I think we have had an exemplification of it in my friend McClung here to-day. For fifteen years of my life I had my friend McClung at my elbow fighting against the permanent location of the State Fair; but now that he is located in Columbus, he thinks there is no other place on God's earth where that fair can be held but at Columbus. Never until about four years ago did you go back upon us on this subject. He is fighting exclusively for the interests of Columbus. I have no special object in view. I am in favor of doing the best we can for promoting the agricultural interests of the State, and I believe, as I said fifteen years ago, the only way is to make a permanent arrangement with Dayton, Columbus, Toledo, and Cleveland, for instance, and go around regularly. You will not incur the four or five thousand dollars expenses. These grounds are already fitted up, and you can make judicious, fair, reasonable arrangements with those cities. But what is the whole point here? "You see," he says, "that the elements are in the way, and you must have arrangements by which you can indefinitely protract this exposition." And he manifestly proposes an exposition similar to that they have got over in Indianapolis, and which swamped them and put them in bankruptcy, just as would be the case here, I believe, were that plan adopted. Out in Indiana they have no other suitable place for holding their exposition except in Indianapolis, but we have plenty of places where we have equal advantages. I have no particular opposition to making Columbus the place for holding this fair, but I do think, after an agitation and discussion of this question for the last twenty-five years, when the people of the State of Ohio have been opposed to it, that it is about time that it should have a rest. And especially do I think that it does not look well for my friend McClung to be so much in favor of its location at Columbus since he has come here to reside as a citizen of the place, in view of his opposition to it in the past.

Mr. McClung: I was not just prepared to see my friend Millikin jump from arguments to rough conclusions as rapidly as he did, but supposed he would give us his reasons for favoring the migratory system. The Butler county fair is a very excellent sort of a fair, and because it is, I would suppose that he would have it migrate between Middleton and Hamilton and Oxford, holding it one year in each place. The argument is just as sound in the case of county fairs as of the State Fair. If the migratory policy is the true one, why not carry it out with the county fairs? Now, the gentleman would refuse to stand to such a proposition. And another thing: in regard to my opposition to the location of the State Fair several years ago, I think my friend Major Millikin is a little short in his memory. I think he has mistaken some other good-looking man for me.

Major Millikin: No, sir; no, sir. I know whereof I speak.

Mr. McClung: He is mistaken; but now that he mentions it, I do remember when, some years ago, there was a gentleman in the State Board of Agriculture, or in the annual convention, who made this proposition—perhaps he was a little premature—that the State Fair be located permanently at this point; and when it was located, that we would gather around it a fine garden, and have fine orchards, and have forest trees, and have them all together; and there was an illustration made at that time, which Major Millikin will remember. It was about the time the Northern Spy apple was introduced. The statement was made by Dr. Coan that he had planted out twenty acres of the Northern Spy, and he didn't know about what time they would come into bearing, and he would give anything in the world to know; and gave that as an argument why we should have the State Fair located, and have an orchard with all the different kinds of fruit, and then we could test the different varieties of each, and learn just how long it took each to come into bearing. I was along with the doctor at that time, and there was a man who opposed Major Millikin, and I think my friend Millikin mistook that man for me. I had hoped Mr. Millikin would take up this question and produce some good argument in relation to it, and not dismiss it so summarily. But it is just as sure as that we are here to-day, talking about this question, that the argument I make about the migratory operations of the State Fair from one point to another are correct. When the week set for holding the State Fair arrives there is not a single member of the Board but shakes in his boots every morning when a cloud comes up. Talk about the elements! It scared you, sir, and your associates, until you didn't know what you were about. These are matters of fact. You wore long visages at such times. I believe they ought to be stable, for two reasons—first, we ought not to jeopardize the amount of money that we put into the exhibition by the uncertainty as to the weather of the week, and, second, we have no right to jeopardize the people's interest in it by making them liable to be prevented from coming and seeing it. And another thing: I believe that when that is done, we will be better prepared to protect the humblest exhibiter in the decision of the judges, and give the judges the amplest time for forming their judgment, and the State Fair will do better, three to one, than when running about on wheels. Supposing you start off again, this season, with the migrating system, and you plank down about five thousand dollars in the preparation, and just as you are ready to exhibit, along comes a dash of rain; where are you? But suppose, on the other hand, it was permanently located in the city of Columbus—and I don't want it located there unless its citizens come forward and put the grounds in shape and give you a proper bonus—then you will only have to apply yourselves to carrying it out in detail; and when that is done, the interests of the people in the exhibition can be subserved here as well as anywhere. I don't care anything for those gentlemen running the Tri-State Fair. It is for the good of the State Fair that the mechanical interests of the country and the agricultural products of the country be exhibited in the very best possible shape, in order that they may be exhibited and examined by intelligent men, and the results growing out of that be carried back to the farm and applied in the farming. It is not a show business at all.

PETER HITCHCOCK. Unfortunately there are two amendments to the proposition, and I therefore can not move that the State Fair be located, for the coming year, at the town in which I live, therefore I have no personal feeling in the question now pending, no personal interest to advocate. But it is a little interesting, Mr. President, to watch the course of this discussion, and notice that it has all occurred between two gentlemen formerly members of the Board of Agriculture. If it be true that circumstances alter cases, is it not also true that cases sometimes alter circumstances? I think that we have seen an exhibition of that thing here.

Now, here, a moment or two since, there was introduced to this Convention a proposition—I don't say whether it would better be adopted or not—which presented to this Convention as grave a question, I dare say, as was ever presented for its consideration. How was it treated? It was not a single proposition, but a number of propositions embodied in one, and any one of which might be considered without the others, neither being dependent upon the other, at all, for its operation. Well, my friend over there, from Butler [Major Millikin], having strong lungs, and having had no opportunity to air those lungs this afternoon, (!) made summary work of it by a motion to lay on the table; and very speedily along came my friend, who does not live in Miami county now [Mr. McClung], but lives in Columbus, and offers another, very much modified, but very nearly the same as one of the others, and providing for the location of the Fair at Columbus, but not for the cultivation of orchards around about it, where they might have experiments in regard to agricultural and horticultural products. He, himself, was in favor of that question lying on the table.

Now, this is the aspect of the case which presents itself, as I understand it. I don't keep very close track of this thing, but I understand the five years to be up now that was experimented upon. What was the result of that experiment of its permanent location at Columbus? Both these members of the Board, I presume, will bear me witness that until about the time that the State Fair was located for five years at Columbus, not one of these other large fairs in the State that are now in operation existed. Two years since the Northern Ohio Fair, the most successful of any of these fairs, I believe, was abandoned for the time being. Why? The experiment was being tried of the State Fair at Columbus, and so they abandoned it. What was the result? The people of that part of the State were not satisfied with the Board. They wanted an exhibition nearer home, and last year they revived the Northern Ohio Fair, and held a fair which, if not pecuniarily a success, as an exhibition was a success, as much so as the State Fair was.

That instance furnishes a complete illustration of the effect of the permanent location of the State Fair at Columbus—I may not, perhaps, say a complete illustration, but furnishes a good illustration, in the one instance, at all events.

Now, it seems to me, Mr. President, that it is very well worth while considering carefully and calmly this matter. We had embraced in the first resolution offered three different propositions, not one of which is dependent upon the other. One is that the State Fair be permanently located in Columbus, upon the grounds of the Ohio State University. That is one proposition, and does not depend upon the others at all. What was the next? That the State University and the State Argicultural Society—although, I believe, it does not bear that name at all—be both controlled by one Board of Trustees. Now, that is not dependent upon the former proposition at all. What was the other proposition? It was that this Board, who should control both the fairs and the college, should be elected, as now, by the members of this Convention. These are independent propositions which might be passed upon together or separately, and, it seems to me, present the question in better form than the present resolution, which is, I believe, in favor of locating the Fair at Columbus, with two amendments pending, one to change it to Zanesville, and the second one to locate it in Cincinnati. Now, I think the first State Fair was holden in Cincinnati, and, if I am not mistaken, there was one holden there since.

MAJOR MILLIKIN. One since—in 1857. That was the last.

MR. HITCHCOCK. Twenty years since. Well, now, my friend over there [Major Millikin], living down there, don't like the first resolution, and moved that it lie on the table, and yet he represents one of the wealthiest agricultural counties of the State; no doubt about that, I presume.

MAJOR MILLIKIN. No, sir; no doubt of it at all.

MR. HITCHCOCK. Well, now, they desire to bring their products and compete in the Fair, without being compelled to go away to the center of the State. Well, I live away up in a county in the opposite part of the State.

MAJOR MILLIKIN. I am willing to divide.

MR. HITCHCOCK. I live up in that corner of the State, and represent one of the smallest counties in the State, which is represented by the smallest man in the State, and I am perfectly willing to go down to Cincinnati and try it there, and am more willing to go over to Zanesville, if it would accommodate that section, which my friend didn't treat very well when he made his speech, just now. The question is not really whether the Fair goes to Cincinnati this year, or goes to Zanesville this year, or stays in Columbus this year. The question really is as to the experience of the five years just past; shall the policy of holding the Fair permanently in one place be adopted? That is the real question to be decided at this time; and there are, we are aware, many arguments in favor of it and against it. I only bring up now just this one thing, that as a whole, so long as the fairs were holden in succession in different localities of the State, there was no failure on the part of the Board to pay all its expenses—that is, as a whole. There was one instance of failure at Toledo; but so long as they were thus holden, however there may have been failure here and there, there was no such failure as that the Board was compelled to call for an appropriation from the State Treasury to liquidate its debt, as has been done since this location of the State Fair.

I say what the experience of the Board was during that time. I don't say what it will be hereafter, because I don't pretend to know so much of the great hereafter as some do. But the experience was, that while these fairs were holden in succession, they were a success. The experience since its permanent location has been a failure, in two instances at least.

The Secretary read the following resolution:

Resolved, That it is the expression of this Convention that the matter of the location of the State Fair be left to the sound judgment and wisdom of the State Board of Agriculture, in whom we have entire confidence.

Mr. McClung. My friend Major Millikin tells me to sit down, and let the vote be taken, but when my friend Hitchcock arose, I was in hopes that, with his parliamentary experience and general knowledge, he would have met this question a little bit more squarely. I would have supposed that he would have, in referring to the experience of the State Fair, told how it came in an embarrassed condition. I would have liked if he had stated that, when it was held in the city of Mansfield, a certain amount of money belonging to it, was lost by the failure of a bank or bank president. Instead of that, he ignores it with all the suavity of his nature, and says this was the result of its being located. Didn't it lose twelve or fifteen thousand dollars at Mansfield, that was taken away? and the State Board came and asked the Legislature for assistance. Was that the result of the location of the State Fair?

Mr. Hitchcock. If the gentleman will allow me, it was not immediately after that loss at Mansfield that the State Board came and asked that it be made up.

Mr. McClung. Now my friend is begging the question again. Does it make any difference, with regard to the facts? Does he seek to evade the responsibility? Does he seek to cover himself up again by the thrust that he has made? When I say to him that a bank stole money, and that it was not until then that we came and knocked at the doors of the Legislature, and asked for an appropriation, and he says, "They didn't ask." I don't care whether they asked, or not. It is a matter of fact. So you can trace it from one place to another. Go to Springfield, where we had some twenty-four thousand dollars when we came there, under the migratory system, and when we came out, how was it? About all gone. My friend Harmount understands that very well, how, in different localities we left with our coffers well filled, but in others we lost; and how was it when we got through? It was because we had lost money at Springfield, and because we had money stolen from us by a bank at Mansfield, and because we were drowned out in half a dozen places. It is not because it has been located in the city of Columbus.

Mr. Hitchcock. I would like to ask the gentlemen whether those coffers, of which he spoke, were so well filled under the migratory system, at some place, or when we started in at Columbus?

Mr. McClung. I say this, in answer to that question, just to get the gentleman to meet the question fairly, that at Mansfield we met a Waterloo defeat. We had been to the expense of putting up the most substantial buildings at the city of Springfield, and had everything prepared for a good exhibition, and when we got through what did we do? That which had cost us $10,000 we sold for less than $3,000; that is what we did; and we are beginning to shrink from such things.

Major Millikin. There is no necessity for it.

Mr. McClung. No necessity; but these are matters of fact. And the gentleman ignores all these questions. Why not just take up the question as you go along, if you want to make an argument?

Mr. Daugherty. I think this a question of very great importance. I think that every gentleman who represents a county here can judge something by his experience in his own county. My friend Millikin lives in Hamilton.

Major Millikin. No, I don't.

Mr. Daugherty. Well, you live in Butler county. I would like to know whether you would like to have your fair moved to Oxford, in the north-western part of the county, or up the river to Middletown. I live adjoining Mr. Millikin, in Preble county, and we have tried the experiment of moving the fair to the north part of the county. The people of New Paris got mad because they said they were not represented, and we moved it there. The next year we moved it to the south part of the county, and the society became bankrupt by the operation. We have now located it at the county seat; and if we have but a little one-horse railroad in our county seat, we came pretty near competing with Butler, the fourth county in the State. We have thirty acres of property, valued at about $8,000. If we had continued migrating around the county, we would have been bankrupt three-fold. Some object to locating our State Fair, but I want to see it located at the Capital permanently, as being for its best interests. I speak of the experience of the fair in my own county as an illustration bearing upon the welfare of the State Fair. If you thus locate it you can build up convenient houses in connection with it, so that they who come from a distance can have a good place to sleep when night overtakes them, and conveniences for feeding stock, etc., which you cannot have when moving from one city to another, and you will have no Waterloo defeats. You can have houses and hotels where good accommodations may be furnished cheaply and reasonably, and then we will all come.

MR. MCCLUNG. I first want to speak about this financial matter. I have the figures that come down pretty close to date. I will read the receipts for the years while the fair has been located at Columbus, up to the last: For 1874 they were $27,674.79; for 1875, $20,539.30; for 1876, $11,909.61; and for 1877, 021,151.21. Now, gentlemen, I am very willing to take up the matter of receipts since the location of the State Fair, and compare them with the receipts at other places. I tell you, they don't compare with Columbus, so far as financial interests are concerned.

MR. HITCHCOCK. I wish the gentleman would state where the $24,000 that he spoke of came from; whether it came from Columbus.

MR. MCCLUNG. My friend Hitchcock asks me a question as to where the amount of money mentioned came from. I see from this table the amount of receipts from the different places.

MR. HITCHCOCK. Those you read are the quotations of receipts at Columbus after its establishment here for five years.

MR. MCCLUNG. Yes, sir; and they are largely in favor of permanent location. Those under the migratory plan fall far below.

MR. PARR. I cannot see any good to come from this resolution. We elect the State Board, and it has always had power to locate the State Fair; therefore, I move that the resolution with the pending amendments lie on the table.

The motion was agreed to.

MR. HITCHCOCK. I move, Mr. President, that during the election of members of the Board, this evening, Dr. Williams, of Monroe county and J. M. Dalzell, of Noble county, be allowed to represent their respective counties.

Which was agreed to.

On motion of B. W. Carlisle, the Convention now took a recess until 7½ P. M.

EVENING SESSION.

The Convention re-assembled pursuant to adjournment, and proceeded to the election of members of the State Board, with the following result:

	Votes.
L. B. Wing	51
Peter Murphy	42
Chas. Smith	43
Arvine C. Wales	32
R. Baker	38
E. J. Hiatt	12
C. C. Cottingham	8
S. H. Pitkin	7
Henry Milner	15
J. B. Robinson	7
T. F. Joy	10
G. .F Newton	8
H. B. Perkins	15
R. S. Gilcrest	3
W. H. Hill	2

Total votes, 61. Necessary to a choice, 31.

The first five named receiving the necessary number of votes, were declared elected.

The Convention then, on motion of S. W. Knapp, of Cuyahoga county, took up for discussion:

THE BEST MEANS OF CONDUCTING COUNTY AGRICULTURAL SOCIETIES.

S. W. KNAPP: The object I had in view in making the motion, was that myself and others might obtain some useful information by spending a short time in comparing our views as to what are the best methods of conducting a county agricultural society. Perhaps I cannot do better than to give some of my own ideas as to that. In Cuyahoga county, for the last ten years, perhaps with the exception of one year, we have connected with the agricultural society a horse-racing or jockey club, or whatever you choose to call it. My own views have always been against it.

We have, for the last four years, found it very beneficial to exclude all intoxicating drinks from our grounds, even beer and cider. We have also found it beneficial to exclude all games of chance of any kind, and we have succeeded very well.

Our society is considerably in debt at the present time, but it is paying its own way from year to year. We have this old debt, however, hanging over us, and I want to inquire of friends here who are out of debt, and have kept out, what will be the best means of getting out of debt, when we have got in debt by the fair, without having to put our hands in our own pockets and pay it up. That we are not very willing to do in our county.

E. T. C. ALDRICH, of Lake county: The remarks of Mr. Knapp, in regard to his horse-racing, makes me think of our experience in horse-racing in Lake county at one time. We never had but one horse-race at the fair in that county during the time I was marshal of the board, a period of ten years. The board were asked to have a farmer's trot, one day. There was a race-horse brought on the track, and I can confidently say that we had more trouble from that race in one hour's time, than we had had for years in the management of the fair. We had prevented intoxicating drinks being sold and drank on the grounds, but at that race it seemed as if drunken men rose right up out of the ground almost. Since that time we have excluded all the farmer's trots, blacksmiths' trots, and racing of all kinds.

GEORGE RITERER, of Marion county: Up in Marion county we have a jubilee once a year, and have our own fun. The people that don't want to see a trot when we have nice order, are given to understand that they can go to one side, to some other place.

We generally have beer upon the fair ground, and never thought proper to take it away until this season. I think it will stay away.

If a man has a fine horse or breeds fine horses, he has as much right to show them as a man has to exhibit draft horses, and they ought not to be excluded.

J. B. DORT: The regular delegate from our county is not here, and I don't know but that I may be considered almost an intruder. The gentleman here spoke about having their jubilee. If they want such a jubilee let them take it to themselves. I say it is not connected with agriculture at all. If we want an agricultural fair, let us have an agricultural fair, and if we want a horse race, go out and build a track somewhere else, and not put the county to the expense of making it, because these race horses are not worth the powder to blow them up. They are not worth keeping, and do not add to the wealth of the county, while the draft horse, by his labor, will enable the farmer to raise corn to sell and corn to keep. Look at the expense in the way of premiums that are given to encourage this business. Large sums of money are taken from the people and paid to these men, who make a business of going around from one fair to another to trot and have a jubilee. I am opposed to this thing, and always have been.

And I am ashamed to say that in our own county a "wheel of fortune" is set up at the fair to decoy young people into gaming and betting. Liquor is also sold there, too, I am sorry to say, and all manner of shows, baboons, raccoons, niggers, and everything. That is not agriculture. I want to see a mighty reform in these matters, and I want to see the State Board take hold of it and do right in this matter. Begin here—here is the place to set the example to the county fairs. Why, you know the pigs will follow the old sow. If you do these things here they will do them in the county fairs. I want to see halls made sufficiently large to accommodate our farmers with all their produce, and comfortable stalls for their stock, and stock exhibited that will pay the owner and pay the community. We want stock that will add to the wealth of our country exhibited at our agricultural fairs. I want the word agricultural emphasized on every page of our report.

L. B. HARRIS, of Wyandot county: The gentleman who preceded me made a very fine speech, one probably that would suit the people, but I recollect last winter when the subject came up with regard to horse trotting at the fair, we had a man there more eloquent than he that opposed it in toto, and objected to everything of the kind. By the way, I would say that he used to be a preacher, and a very good man. Yet after fighting very strenuously this thing of horse trotting at fairs, to my certain knowledge using all his energy to prevent it, nevertheless there was horse trotting there. This man did not like it because he could not persuade the Board to banish the horse trotting, and consequently became huffy, and would not go into the fair, but was going to break it up by not paying his quarter. He was hauling wood during the fair a short distance from town, and I will tell you what is true, that is, that he stood up on his load of wood and looked over at the horses while they were trotting.

While I am up I will merely add that the fair in Wyandot county for years back has been run by whisky, by roulette, by negro shows, by anything else you can name, almost. The result has been that we have been getting behind, and I don't know as we would have ever caught up, but last year, against my wishes or consent, and though I protested against it, they elected me president of the society. As I never had taken a dram of liquor since I was born, I was determined we should not have any there, and we ran it this year without any whisky and without any roulette, or any such devices, and we had such a successful fair that it reminds me of the letter of a young man who went from our county to Illinois. A German in our county bought up a large drove of sheep and sent them to Illinois to winter, and sent his son, who was a very wild young man, along with them to take care of them. Instead of attending to the four or five thousand sheep intrusted to his care, he sat by the fire and neglected his business. The sheep became diseased, and the young man kept writing home about the sheep dying off. The old gentleman could not read English and the young man could not read German, so the old gentleman used to come to our bank to get his letters read. The young man kept writing about the sheep dying, and after a while wrote to his father that they were dying so fast that they could not skin them as fast as they died. The old man wrote back to his son that he must get help and catch up skinning the sheep as fast as they died off. At last the old man brought a letter to the office to be read, and the young man wrote: "Father, I have taken your advice and got help, and have caught up, and got about forty ahead." Now, we have not only caught up but have run ahead, and we think the principle on which we are running our fair is right.

Mr. Warner, of Licking county. I have been connected with the small fair at Pataskala. I have been marshal at that fair for ten or twelve years, and every year I saw jockeying and horse-racing. I am opposed to that, because I saw more betting and gambling than I had seen elsewhere for many years. I wish to say to the State Fair and county fairs if they want that kind of horse-racing let those interested get up a purse distinctly for that. When an honest farmer gets there with a good horse, sir, he stands no chance, because the jockeys are there who make a business of it, going from fair to fair swindling the people who give their money to keep up the fair. I am opposed to this kind of business. So, also, with cattle; there are those who make a business of going from fair to fair, making a business of it. I would like to see the State of Ohio doing away with this jockeying, and gambling, and defrauding the farmer, who has not the time to spend upon his horses that they do, and who cannot compete with these jockeys. As I understand it, these fairs are gotten up for the benefit of farmers; but when connected in that way it is not much of a benefit to them.

So far as the liquor business is concerned, I am a Murphyite. I never took a dram of whisky in my life. I am sorry to say that at the Licking county fairs they permit whisky to be sold every year. At Patalaska they got a little behind last year, and they thought they would let some men sell liquor and get pretty big pay for the privilege. So the men came there and sold whisky, a thing that was never done in that fair before. And they didn't get out of debt either. They also permitted gambling institutions, and young men who had gathered up a dollar or two were cheated out of it by these gamblers. I say every man in our community ought to help put down these things.

T. F. Joy, Delaware. It strikes me that the directors of our county agricultural societies forget that they are officers of the law; just as much officers of the law as are our county commissioners. They are elected under the statute of the State, which contains very wise provisions. It defines their duties, and I claim that any county that takes this statute and executes it fully, cannot fail to have a good, useful agricultural society, one that will be a benefit to the county, a benefit to the agricultural, manufacturing, and domestic interests of the county.

There are certain duties that the board of each county agricultural society are required to perform. [Mr. Joy here read the provisions of the law governing county agricultural societies.]

These are the plain duties required of every county agricultural society, and I claim that our State and county agricultural societies ought to be run in the interest of farmers, and run by farmers, and if honest and intelligent farmers take that as their guide they cannot fail to have a society that will be of vast benefit to our agricultural and mechanical interests.

Now, Mr. President, there are certain other things that the law says shall not be permitted, and any officer that permits liquor to be sold within the limits of the fair ground, or within two miles of it ought to be fined. It is within the province of the officer of the law to remove every hell-hole within two miles from the fair ground, and it is their duty to do it.

The language of the law is not that they *may be* permitted, but says they *shall not* be permitted. And the board is bound by the provisions of the law here to execute it. So there is no kind of excuse for having liquor sold on our fair grounds. It is the only time when we can prevent liquor being sold, except, perhaps, on election days, and it is hard to do it then, and I do hope our societies will prohibit the sale of liquors within two miles of the grounds.

Then again, I claim that we cannot have successful fairs when we permit these side-shows and devices, these things that attract the attention of the children and youths, who have no interest in agricultural matters at our fairs. The law just as plainly says they shall not be set up nearer than within one-fourth of a mile of the grounds, without the permission of the board. They can by permission of the board, but unless they permit it they cannot be set up within less than a quarter of a mile. I claim that these shows and gambling devices, and everything that attracts attention from the real object of the society—the agricultural and mechanical interests of the county—should be prohibited.

J. M. **Daugherty**, of Preble county: I belong to our county agricultural society. About twenty-five years ago our grounds consisted of about seven acres, and our receipts ran up to from five to seven hundred dollars a year. The fair kept growing larger, and our facilities were insufficient, and we increased our grounds to eleven acres. The receipts increased to about twelve or fifteen hundred dollars. In 1860 we still lacked ground for the proper accommodation of exhibiters and visitors, and our old grounds were sold and we bought thirty acres, a good piece of ground for the purpose. These grounds were then well improved by erecting the necessary buildings, etc., upon them, and we made a half-mile track which was considered a very good one. We thought it necessary for our financial success to do this, as our adjoining county societies had fine tracks. But when we got our fine track and other improvements finished, we found ourselves in debt some three thousand dollars. The balance of the board and myself had to carry that debt. We had a claim on the grounds, but had given our note for three thousand dollars.

The question came up in regard to allowing the sale of liquors on our grounds. We have been governed by the State law, and never have allowed liquor to be sold on the grounds, nor beer or ale. But they bring liquor there in their pockets and drink, and the hollow stumps will be full of liquor bottles after the fair. For this, however, we are not responsible, as we do not allow it to be sold on the ground.

We do not allow the devices or shows referred to, and we have had success all the way along. But we found we could not get out of debt, and had to introduce fast horses—trotting horses and pacing horses—and we had to offer pretty fair premiums to get them as they would not come without it. Other counties would offer more than we did. The result has been that as we succeeded financially, we built an ampitheatre and added other improvements, from year to year, and have reduced our indebtedness down now to about nine hundred dollars.

We don't claim that the fast horse business is agriculture, but it is a help to us financially. For the last seven years, since I have been acting as president, those men who have howled about our fast horses are on hand at the fair. We issue complimentary tickets to reporters, the general county officers, also to our ministers. For the last ten years, sir, we have given tickets to the ministers, and we never found but one to fail to look at the fast horses. They like to see them and the children like to see them, and it has been a financial success so far. I don't say that this feature is agricultural, but some contend that, to some extent, it is.

T. F. JOY: What is the purpose of an agricultural society? To make money, or is it to improve the morals of the people, and to improve the agriculture of the country?

MR. DAUGHERTY: It is to improve the morals and the agriculture, but the State Board and the county boards have stretched out a little. The cities and towns are in favor of this thing, and many persons that pay the most attend on this account.

JAMES GRIFFIN, of Butler county: The question is, I believe, as to the best way to conduct agricultural societies. I am from Butler county. It is pretty well known that our society is pretty generally successful. There are two or three general items, to which I will refer, that enter into the conduct of the fair with which I have been connected for seventeen years. We have a very fine half-mile track connected with our fair grounds, and have a large amount of stock shown both for speed and for draught purposes, brood mares, and all kinds of horses. Now, I would say that this one thing is a great attraction to the fair in Butler county. The track is good, and the exhibition is grand. I have seen thirty-two pair of match horses upon the track, many fine buggy horses, and so on. I would say, gentlemen, that the trials of speed is one of the elements of success, as we think.

Another element of success, we think, is due to the fact that our fair is open to the world, so that they can come from any other county, or from Kentucky, Indiana, or any other place, and compete with us.

Another feature is this, that we charge the small fee of one dollar for a family ticket, and twenty-five cents for single admission, and admit ladies free. I believe that is one of the greatest inducements, because if you get the women in, the men will be in. [Laughter]

I would say that we exclude gambling, liquor, and betting in any shape or form. If a man is known to bet on stock, he is turned out of the society.

Now, with regard to the success of the fair. We always have a large fair down in Butler county. This year we had one of the best fairs we ever had. So far as I can gather from our report, we took in $9,228.

A MEMBER: You have trotting?

MR. GRIFFIN: Yes, sir, every day. We have trotting there on one of the finest tracks in the country. We aim to have the whole thing conducted on christian principles. [Laughter.]

LEO WELTZ, of Clinton county: I would like to inquire how the dollar family ticket plan operated?

Mr. Griffin: We have an admission fee, and the family ticket is issued to the family, including all the members of the family under twenty-one. That makes the head of the family a voting member of the society, and gives them the privilege during the whole fair, being allowed to go in and out as they wish during the fair.

J. M. **Millikin**: And generally about fifteen go in on one ticket.

Mr. Griffin: I will say that my friend Millikin and I differ in reference to the price of admission to the fair. With due deference to him, though I look upon him as being the very head of our community, and you that know Mr. Millikin can understand why we appreciate him there, yet I can not agree with him on this point. He thinks we ought to charge a little larger admission fee, and thinks we ought to charge women as well as men. But our experience leads us to believe that that is not the way. All our exhibits in all our halls, in every class, were larger this last fall, I believe, than ever before, as was also the case in respect to the exhibition of horses, cattle, hogs, implements, etc., and our receipts the largest, amounting, as I said, to $9,228.

Mr. Baker, of Lorain county: Are not those tickets pushed through the fence sometimes?

Mr. Griffin: I presume sometimes they may be.

J. P. **Marsh**, of Williams county: We have been running our fair on the old plan of the dollar membership ticket, allowing a whole family to go into the grounds on the membership ticket during the fair—that is, up to this year. We have been having a great deal of talk there in regard to the propriety of issuing membership tickets, and allowing them to be promiscuously used for the entire time of the fair, and to our certain knowledge we have been imposed upon most outrageously, ten or fifteen families having sometimes entered the fair on one ticket. A man belonging to church, and who is moral and respected, will take all his neighbors and himself in on one ticket, and then will shove it out through the fence to another person, who will take all his neighbors in on it. [Laughter.] The result has been that we have had a large attendance and a very small revenue.

This year we adopted the plan of issuing our tickets with coupons, or giving single tickets at fifty cents for each membership ticket sold, and allowing no person to go out without a ticket. That raised the indignation of the moral men there—we have some of them—and they put their heads together to break up our society. The result was that our income this year only amounted to about $1,200. One of our beer manufacturing establishments there—we have one of the most extensive one in the country at Bryan—offered one hundred and fifty dollars to allow them to set up a beer stand in the fair grounds. As I said, we have some moral men in Williams county, and we utterly refused to allow them to sell beer on our grounds, and we were short that one hundred and fifty dollars, and now some of our moral men say, "if you had listened to us and let the beer men started their shop on the ground you would have came out better."

A proposition was also made to us to allow thirty or seventy feet of our ground for the purpose of carrying on a bowery dance. We were offered one hundred and eighty dollars for this privilege, but we did not want their establishment there. But there was a certain member of our board that took exception to this, and when the resolution to rent the ground for the bowery dance was voted down by the members of the board, two members tendered their resignation.

The object of our fair certainly is to encourage agriculture and horticulture, and to improve the breeds of our stock, and they should be conducted with an eye single to that.

Mr. Marsh related at some length the disastrous results of horse-racing which they once allowed on their ground, speaking of the accidents that occurred, the drunkenness, gambling, and disorderly conduct which prevailed. While he was not so much opposed to the trials of speed in trotting, he was now utterly opposed to the running races at fairs, which were dangerous, to say the least of it.

In conclusion, he said, if success at our fairs depends upon horse-racing, gambling, beer and whisky selling, and the congregating of a drunken set of—well, of men engaged in a jubilee as has been talked of here, I don't want any of it at our fairs, and if they cannot be conducted without these things, I think they would better be stopped at once.

Wm. R. Pool, of Logan county. In my judgment some have got a good ways oft of the subject we were to consider—the best mode of conducting our county fairs. I will briefly state the manner of conducting our fairs in Logan county for some years back. We have grounds comprising twenty-five acres. For a few years, commencing twenty years back, we were considerably in debt. For some years we have been making a good many improvements on our grounds, but in the way we have conducted our fairs we have got out of debt and have a little surplus every year for several years now.

Our county has adopted for a number of years a "trotting line," as we call it. We have found considerable trouble to keep the racing out of that line, but have succeeded thus far. For my part, my way of thinking in regard to that is, that it is not wrong to allow trotting on the track. Our country demands good buggy horses. We have never allowed any betting, to my knowledge, one the trotting line.

With regard to side shows, I would say that that feature is not yet exterminated at our county fairs. A resolution against allowing them at our fairs was offered at one of our meetings last year, but lost. I think this feature is wrong, but some counties have adopted it, and our county, I think, defends it.

Some of our people understood—whether correctly or not—that there was regular horse-racing allowed on the grounds by the State Board at our State Fair, which made it a good deal more difficult for us to keep on the line we desired. Gentlemen, we all have our influence. If the State Board gets on the right track, and keep on the right track, I think the county boards will follow their example. Many of our leading men attend the State Fair, and, as things are conducted there, so they think they should be at the county fairs.

W. B. McLung. I have been looking around to see whether there was present here some gentleman like Mr. Reber, for instance, who is a breeder of thoroughbred horses, and who believes that the best interests of stock men in the State is advanced by the breeding of thoroughbred horses, but I don't see any such man present.

Now, in discussing this question, there appears to have been two lines of remarks indulged in here. One was a total condemnation of the interests of thoroughbred horses, or race-horses. In the other, there seemed to be a little bit of sly attack made upon morals. A good deal has been said about moral men and Christian men. My own opinion is, that a man who is a moral man on the surface, can be just as mean a man as can be found, and if you find a mean man in church, he is as mean as the meanest. [Laughter.] I am not in favor of any thrust at moral men in the church or out of it, but my idea about the morality of some persons referred to here, is, that it is not morality, but a pretense to morality.

Now, as to the promotion of the interests of agriculture by the thoroughbred or race-horse. Somewhere in England—I am not now able to refer to the place—a few years ago, there was a post-rider who made twenty miles an hour uniformly on his route. Now this time was made by the employment of thoroughbred horses—the horse that was gotten to test its speed and bottom, or endurance. And that was the only horse that could be got to make that test. It was a celebrated case of which you have read.

Now, here is a horse, like some Mr. Reber and others have imported, with fine bone, fine carriage, and everything to make him just the horse to breed, to give you the kind of horses you need in many uses to which horses are put—horses that will have the power of endurance. Now we are here to-night, sweeping out at one fell swoop this kind of horses. That is not the true theory according to my idea. The matter of racing should be put under certain restrictions. You have the law in your hands, and you can control this thing and keep it in proper bounds.

You all see that the breeding of this kind of stock has added to the horses of Ohio the most important element we find in horses—that of greater endurance. You must have trotters, and you must breed them from roadsters. If that be true, how are you going to do that unless you encourage exhibitions of speed? Is Mr. Reber and other gentlemen going to England and other countries to pay two or three thousand dollars apiece for horses if they are not allowed to bring them to our shows and exhibit their speed and endurance? If they violate the law, turn them out. This is a matter of agricultural interest. It is not a matter of accommodation to them only, but a matter of dollars and cents to agriculturists and raisers of stock, because any gentleman here knows quite well, that a carriage horse, well broken—gotten by a thoroughbred horse—nice, attractive, and magnificent as we often see them, when put into our markets will bring in the money, and replenish the coffers of the farmer. Restrain him, I say, gentlemen, but don't strike that kind of a blow. After all, don't it come down to about this: that we want to *control* it—we want to govern this matter—and you have the law and have a right to control it. But don't throw away an investment so important to the State of Ohio; so important to those who have it, and so important to every one of us in every phase of life we can conceive of almost. If a gentleman wants a carriage horse you don't ask him to take a roadster, but a horse that has been bred in some way from a thoroughbred. Now I have said this much in defense of the thoroughbred horse, and ask you to consider it as a financial question, and almost as a social question, because when we want a good carriage horse for our families, the thoroughbred, kind, attractive, and with great powers of endurance, is just the kind we want.

DR. F. M. BLACK, of Pickaway county. I have had some little experience in running county fairs. The ground has been pretty well gone over in this discussion as to some points that are detrimental, and as to some that are advantageous to a society for the purpose of improving agriculture and horticulture throughout the country.

It is well known that no business can be run without money. That is one of the first objects that you must look to to have success. That is just as necessary as that you must offer liberal premiums in order to get up competition so as to have a good show, and to induce people to attend the fairs. Various kinds of devices have been used in my county for selling tickets to prevent abuses. We have had a set of tickets there, which were coupon tickets, costing a dollar, which made the parties purchasing them members of the society for the year; and every time he entered there was a number of the coupon punched, so that the ticket, whenever it was used, admitted a person. That destroyed one feature of an abuse that has been referred to—preventing the plan of handing the ticket out and being used repeatedly, and which thing had been done in our county. When all the coupons are punched, of course the ticket is worthless. That kind of tickets did very well, but there was a certain class of persons who wished to take the advantage of family tickets, who were greatly down upon it, and there was a move made that was brought to bear upon the Board which caused it to abandon that rule. For the last two years, we have had a number of single admission tickets, at twenty-five cents each, and, with the exception of these coupon tickets, that has proved more successful than any other mode of admission we have had.

There has been a great deal said here upon the propriety of horse racing upon agricultural fair grounds. That question has been discussed at length in our society. Though we have a very short track upon our ground, we have a very beautiful fair ground, forming a natural amphitheatre. Perhaps there is none in the State better for show purposes, affording such an excellent opportunity for seeing over the track, but we have not a sufficient amount of ground to make a track of but little over a fourth of a mile in extent. That very necessarily debars any great amount of fast going, and we have attributed some of our lack of success in the management of our fairs to the fact that we have not sufficient room to give trials of speed. It has often been asked me when would be our best days at the fair, the best running or trotting, and I would have to tell the persons making the inquiries that our grounds were not so arranged as that we could give a fair test of speed. "Oh, well," they would say, "you will not have a large attendance."

The trotting horse attracts the attention of most people, and it is almost impossible to have successful fairs without a trial of the speed of trotting horses.

Our fair receipts do not reach five thousand dollars. About two or three thousand dollars is the most we have taken in for the last five or six years. We have got in debt, and have been pulling away to get out for four or five years. We have of late years made it a success in a small way, but had to come down on our premiums in order to get a surplus to apply on our debts. If we had had a sufficiently large track, we believe we could have been out of debt long ago.

There is certainly nothing very wrong in fast trotting horses. The ministers of our county always receive complimentary tickets, and they come to the fair and enjoy the trotting of the horses as much as other persons. I admit that we don't want jockeying, or whisky selling, or gaming. One of the banes at our fair has been the drinking. Our Board are not drinking men, as I can say, though they allow persons to go in and sell intoxicating drinks. Still we have not had a large number of drunken men on the ground.

I think there is no branch of industry that should be encouraged any more than the breeding of trotting horses should be encouraged. There is more sale to-day, and more demand for first class roadsters, than any other class of horses; and the older we get as a country the more demand there will be, and the more time and money spent in breeding those horses; and every man who has a stud of horses, and is breeding them, wants a track to speed them on; and this is one of the first features in a fair.

Mr. Calvin, of Erie county. While I advocate horse trotting at fairs, I do it on the ground that it promotes the morals of a community to do it. Previous to our introducing trotting on our fair grounds, we had a horse association in the county for many years, and had all kinds of horse trotting, and all kinds of drunkenness and fighting. Since the introduction of it on the fair ground, conducted properly, it has broken down that institution, so that there is nothing of the kind whatever. A minister in our community told me, last fall, that the best interests of the community had been subserved by the introduction of trotting at the fair. He was sensible. When we first commenced we had two very conscientious members of our Board that opposed it very earnestly. We were then holding the fair three days. The Board voted to add the fourth day to the fair, and confine the trotting to the fourth day, so that those who had conscientious scruples about the trotting might go for the three days and remain at home on the fourth day. The consequence was that the two members who were so conscientious about it spent the entire day upon the track, and no more attentive persons were on the grounds than they were. I trust it did not corrupt their morals. The people want recreation of some kind, and my doctrine is that it is better to have that kind which we can control, and not only control but utilize, and even make a little money out of it.

My experience is, and has been for many years, that it is impossible to run a successful fair without paying liberal premiums. We pay from $2,500 to $3,500 in premiums every year. We bought grounds that cost $25,000, and have put a good many thousands of dollars' worth of improvements on them, and all are paid for.

Our experience shows that horse-trotting—proper trotting—at agricultural fairs is just where it should be. We have no drunkenness and no betting at our trotting. It is well understood that we will allow nothing of the kind. It is probable that there is not a more succesful society in the State of Ohio than we have to-day. Our grounds are comparatively small for the number of people we have had in attendance. Our receipts for the last ten years have ranged from five to ten thousand dollars a year. Our buildings, most of them, are located in the center of the track, and to do away with the inconvenience of crossing the track we propose to tunnel under the track, which will cost us about three thousand dollars.

D. L. Pope, of Geauga county: This question of fast horses at fairs is one which all county societies, no doubt, as well as the State Board, have had considerable solicitude about. It is condemned by some and upheld by others. Now I rise simply for the purpose of asking the question whether premiums shall be paid for this purpose—whether the plan has the approbation of the different persons here, representing the different county societies, and I would like to have the counties called, and members signify, as their county is called, their approbation or disapproval of the trotting course at county fairs and at the State Fair. This is a question about which we have had some doubts, but still the Board have paid premiums for fast trotting and fast running. We had a running race upon the track at the State Fair last fall, and a year ago last fall, and the question will no doubt come up in the Board for discussion this coming year, wherever the fair may be held. As has been remarked, it is not agricultural, but in order to make a success of fairs we must have an attendance, and must raise the funds to pay the premiums. Now, then, does the speed ring produce an attendance equivalent to pay the premiums and an excess? There is not any question as to the propriety of excluding intoxicating drinks and the attendant rowdyism. I do contend that a fair properly conducted need not embrace the selling of intoxicating drinks, or gambling, or shows, or pool-selling; but whether or no trials of speed should be encouraged, and premiums paid for them—and premiums of the size the boards are sometimes compelled to pay in order to bring fast horses upon the track is another question, and I wish that some member might offer a resolution upon the subject—I don't wish to do that, but I would like to get the sense of this Convention as to the propriety of the State Board paying premiums for trials of speed.

C. Mack, of Putnam county: Whether the speed of fast horses is any benefit to fairs appears to be a question in the minds of some men. We tried running a fair for some twenty odd years in Putnam county, and had poor stock, poor horses, and poor every thing else—probably poor management. We had no trotting, except on one day, during the entire fair, and that was slim, and our attendance was very poor, and we were sinking money every year. This year we introduced the plan of having trotting and racing—two trotting matches every day—and it has enlivened the interest in the Putnam county fair in a remarkable degree, and has caused men to go fifty miles to breed their mares, and the result will be that in ten years more we will have as good stock in Putnam county as anywhere in Ohio. The fact is, most men want horses of speed. Every doctor needs it, every minister must have it, and most others need it; and if you don't offer premiums at your fairs for trials of speed, you don't get horses of speed. I claim that it is beneficial to fairs in that it draws a crowd, and unless you draw a crowd you cannot get money enough to run the fair successfully.

MR. STEWART, of Clarke county. You all know something of that beautiful little city called Springfield. Our county is composed of ten townships. Some years ago the State Fair was held at our county seat—Springfield. Our society of course fell into State Fair airs, and we went beyond our means and swamped ourselves in debt. The debt is, I believe, some $10,000, perhaps more—$12,500, a delegate tells me. Now probably it would be an advantage to many here to know how we managed that matter and got out of debt. As I said, we had put on State Fair airs, which were expensive, and the fair seemed to be run by the people of the city, while the agriculturists of the county seemed to have but little voice in directing the agricultural society. The debt was felt to be oppressive, and those that had been having an interest in the matter in the city became tired of it, and were about to throw it away—forsake it, as it were. The agriculturists then went to work and reorganized the society. We organized on such a plan that each of the ten townships in the county should have its delegates. We have two for each township, serving two years, one member going out every year. As soon as that reorganization was effected we put the question before the people whether the debt should be paid, and they voted to pay it at once.

A MEMBER. How did they pay it?

MR. STEWART. By taxation. They taxed the property of the county—the whole duplicate of the county—and paid the debt. Before our reorganization the delegates elected would sometimes all be right around Springfield, but now they are distributed throughout the townships, and will help to secure an attendance. These two delegates in each township advertise the fair, by posting up notices, and encourage an attendance upon it. In that way I think we are securing success in the management of our fair. Last year we paid our debts, and have a small surplus.

We have heard in the discussion a good deal about horse racing, but have not heard from the mule at all. I was going to ask my good-looking and serious friend from Logan if he would not get up and describe a mule-race they had at their fair last year. [Laughter.]

Member from Logan county. For a number of years we have been having no races at our fairs. Sometimes one or two would try it, but nothing of the kind was arranged for. Last year we thought we would change the programme, and would at least have a mule-race, enlisting all we could to go in. I forget the number that was there on the track, but I suppose all the mules in the ground. Some of the riders had whips, some had clubs, some one thing and another, to get up the speed. My recollection is that there were from eighteen to twenty mules on the track, and two of them, I believe, got around. One of them, when it got about one-third around the track, thinking it knew a little more than its rider, concluded to cut across and save most of the distance. It took across among the people, and, I think, got about three-fourths of the way before its rider caught up. If let alone it would have got out first.

MR. LAWRANCE. I have been publishing the Ohio Farmer for seven years, and ever since I have been publishing it this question has been discussed. It has been discussed a good deal to-night, and this Convention is about as near decided in regard to this question as I was when I commenced publishing. For my part, I would like to see, as my friend Pope has suggested, an expression from the presidents of the different county societies who are here. It looks to me as if there would be some little weight about that. And I will move, if you will entertain my motion, to get an expression—that it is not expendient to pay premiums for horse-racing at fairs.

A **Member.** Do you mean trials of speed of all kinds?

Mr. Lawrence. Any trials of speed, whatever.

J. M. **Daugherty.** When we speak of speed in our county we mean trotting. We never allow horse-racing. They came up to our last fair from Springfield and from other cities, and said it was allowed at the State Fair, and tried to prevail on us to allow it upon our track. The board consists of ten member, besides the president and vice-president—twelve in all. As long as I have been president we have put our foot upon racing. I believe in fast horse-trotting, providing it can be kept within due bounds, and conducted so as not to injure the morals of the rising generation. I think it can be made a success when thus conducted. Some of our colleagues here have asked how we can tell a buggy-horse without his sire has been tested on the race-course. A gentlemen in Preble county says he paid three thousand dollars for a thoroughbred horse. We won't take his word as to the value of his horse till he is put on the track and tested.

A **Member.** You must run him then.

Mr. Daugherty. No, we will trot him two or three miles and see whether he has got bottom. We want no racing, because it is almost always attended with gambling and betting. But we have not had any drunkenness, or pickpockets, or anything of the kind. If we want to test a horse for his speed and bottom, and test him right, I don't think there is anything immoral about it. At our fairs we have managed it so it has been a success year after year.

J. C. **Levering**, of Knox county. The most difficulty we have ever had was to keep it from being known before the horses went on the track which horse was to beat. We had some trouble in that direction, but we have as fine fast horses as any county has. Members of the State Board know that Knox county has a great many men there who have a weakness for fast horses, and our best fair days are when we have good horse trotting. On such days we have the best attendance and make the most money. We have endeavored to control the matter, but find it very difficult to control. Those horsemen have many devices by which to get ahead of boards, and unless they are pretty sharp they will do it. But we have been able to control the matter; have had no accidents and have the best results. We have four classes of premiums on horses—for thoroughbreds, draught horses, general purpose horses, roadsters.

A **Member.** It seems to be the idea with some that we cannot have fast horses in the State at all, unless they are brought on the fair ground. Now, the great State of New York, I think, has just as good horses as the State of Ohio, and they don't permit them to go into the State fairs to trot or run. I think there is a legitimate place for fast horses, but I don't think it is at the fairs. I have attended a great many fairs in my life, and have noticed this one thing: that where there were fast horses to show their speed, the people would go in one continuous string to see the racing, while they would not stop to examine anything that was calculated to be useful to them, but would pass by mowing machines, reaping machines, the finest cattle, etc., and go on in a great hurry to the ring to see the racing. My objection to it is that it attracts the attention from the legitimate objects of the fair, and also object to it because it is demoralizing.

J. F. **Charlesworth**, of Belmont county. We have held thirty fairs in Belmont, and have always had a contest for speed. We stand, I believe, the third county in the State for horses, and have some of the first horsemen in the State engaged in raising horse, and have imported some five thoroughbred horses into the county, and they have been bred to good mares there. Trials of speed have been kept up at our fairs, and the horses whose speed has been developed there have sold at high prices. I remember of one that sold for eleven hundred dollars; another for six hundred; another for a thousand; and one for thirty-five hundred that was a half brother to Sleepy George, the fast pacer. Their speed was developed, I think, on our fair ground; the money for these came into Belmont county, and this result, I believe, was from our trials of speed in trotting on our fair ground. I think there is no doubt but that the speed contests at our fairs have developed fast horses that sell for more money than the common draught horse, or horse for all work. We contend that the developing of fine horses, speed included, is encouraging agriculture and bringing money to agriculturists; therefore, I am opposed to the resolution.

J. H. **Shields**, of Mahoning county. I represent Mahoning county, a county that probably has as good horses as any other county, and that has sold as many trotters, I presume, as any other county in the State, and for good prices. We have never had at our agricultural fairs trials of speed for trotters, for the very reason that we have a horse breeder's association that makes that a specialty, offering large premiums for speed, which we, as a Board, have not considered in accordance with the law. We have discouraged this matter at our fairs also to keep gambling out of our grounds. We have thus been enabled to give larger premiums on crops, so that instead of paying five or six dollars premium on the best five or six acres of wheat we pay twenty-five or thirty dollars to encourage farmers in the raising of wheat, and so with other crops. We prohibit gambling. We permitted the selling of beer last year. Persons who were at the State Fair said, "Why they sell the privilege to sell beer on the grounds at the State Fair, why can't we do it?" That argument carried; but the result was such that we are now satisfied to shut the beer out forever, and not only beer but everything of that character.

T. F. **Joy**: I understand that the resolution does not propose to exclude the proper testing of roadsters or thoroughbred horses, but simply to state that, in the opinion of this Convention, it is unwise to make speed in running a test of merit. One horse may be able to go around the ring in a few seconds less time than another that may be three times as valuable for other purposes.

W. B. **McClung**: I think the resolution ought to be amended a little. We ought not, perhaps, to pay premiums for racing, but that we should offer premiums for fast horses and that the test should be for trials of speed, and that we may test it by running them together or against time. We want this thing to give a fair show for thoroughbred horses.

Wm. **Parr**: I would move to amend so that it shall provide that there shall be no premiums paid at county and State fairs for trials of speed for horses.

T. F. **Joy**: I move to amend the amendment so that it shall read in this form: That speed exclusively shall not be made the test, etc. That will not prevent the proper trial of blooded horses, or proper testing of roadsters, but that speed exclusively shall not be made a test, and that the committee shall have the right to take into consideration the general make-up of the horse, and if he comes out second or behind other horses, he may take the premium.

Mr. **Lawrence**: The clear intention of this resolution was to get a square expression upon this subject. You all understand it. I don't think we need dodge it. The question is whether we should do it or not. We all know what the custom is. Now, is it the opinion of those voting that this custom is expedient and should be continued, or is it not? There is no use of dodging it.

L. B. Harris: I am not opposed to trotting horses at our county fairs. I think if we want a running line, that should be outside of the fair. I would like to vote to have trotting for premiums—reasonable premiums; but to put it all in one, and include the racing, I will have to vote against it.

W. B. McClung: Under the rules of English horsemen, and under the rules of Scotch and Irish horsemen, the test of the thoroughbred horse as to his durability and power, is made by his ability to run. The test is made by his running a mile, two miles, three miles, and as high as four miles in a heat. Now, it is necessary to cultivate this thing under the rules laid down by horsemen, and I hope the object they aim at will not be defeated by any action here.

A Member: I would like to know whether the resolution refers to running horses or trotting horses.

The President: I understand it to cover the general feature of racing and running at county fairs, which would include both. It defines itself very well by including racing at county fairs.

The vote being taken, the resolution was lost.

Mr. Jamison offered the following:

Resolved, That this Convention extends a vote of thanks to the members of the Senate for the use of the Senate Chamber for holding this Convention.

The resolution was adopted.

Mr. W. B. McClung offered the following:

Resolved, That it is the sense of this Convention that speed in horses should be encouraged by county agricultural societies, and that premiums should be offered therefor.

The resolution was adopted.

A vote of thanks was, on motion, tendered to the Sergeant-at-Arms of the Senate, for services rendered during the session of the Convention.

The Convention then adjourned at 10:20 P.M.

OHIO STATE FAIR, 1878,

Held at Columbus, September 9 to 18.

RAILROAD ARRANGEMENTS.

The State Board of Agricultural has made the following railroad arrangements for the benefit of visitors and exhibiters at the ensuing State Fair:

FREE FREIGHTS FROM UNION DEPOT TO FAIR GROUNDS.

Several special freight trains will be run from the Union Depot to the Fair Grounds by the Scioto Valley Railroad Company, carrying exhibition freights, such as live stock, machinery, etc., etc., free of charge to the exhibiters, provided said freights are returned without change of ownership. Notice will hereafter be given of the number of these special freight trains, and the hours at which they will leave the Union Depot. A special certificate will be required from the Secretary of the Fair by the Railroad Company before refunding these freights.

PASSENGER FARES.

All the railways terminating in or passing through Columbus will carry visitors at excursion or otherwise reduced rates of fare; and trains will run regularly from the Union Depot to the Fair Grounds.

FREIGHTS.

The following roads will carry freights free to exhibiters, under the following regulations, viz.:

First. The exhibiter to pay full rates of freight from the point of shipment to Columbus, taking a shipping bill and receipt from the railway company for the same.

Second. To have said articles of freight regularly entered upon the exhibition books of the State Fair, and returned over the same road over which they were originally shipped, without change of ownership, certified by the Secretary of the Fair. The articles will then be returned free, and upon the return of the articles to the original point of shipment, the shipipng bill, receipt, and certificate from the Secretary to be placed in the hands of the local freight agent, who will attend to having the amount originally paid by the exhibiter refunded to him.

Columbus & Toledo Railroad.
Columbus & Hocking Valley Railroad.
Columbus, Springfield & Cincinnati Railroad.
Cincinnati, Sandusky & Cleveland Railroad.
Baltimore & Ohio Railroad.
Scioto Valley Railroad.
Pan-Handle Road, branches and lines in Ohio, that is to say:
From any point on the Cincinnati and Muskingum Valley Road.
" between Pittsburg and Columbus.
" " Logansport and Columbus.
" " Indianapolis and Columbus.

From any point on the Little Miami Road.
" between Richmond (via Dayton) and Columbus.
Cleveland, Mt. Vernon and Columbus.

"BEE LINE."

The C. C. C. & I. Railway, or "Bee Line," will return freights free which have not changed ownership, but not refund any of the amount originally paid. This applies to the roads—

From Cleveland to Columbus.
" Galion to Union City.
" Springfied to Delaware.

ENTRIES AND TERMS.

Any person may enter as many different articles for exhibition as he or she may own in any of the departments, free of charge, except in speed classes and sweepstakes.

No exhibiters' tickets will be issued.

The committeemen are requested to report themselves to the treasurer at the entrance gate, and he will direct them to the member in charge of the department in which they are to serve, in order that they may be furnished with an appropriate insignia.

PRICE OF ADMISSION.

One person to all parts of the ground, fifty cents.
Horses and vehicles, free of charge.
Children under ten years old, half price.

ORDER OF EXHIBITION.

IN THE HORSE-RING.

There will be no exhibition for premiums in the horse or cattle rings on Monday, September 9.

Tuesday, September 10.—At 1 o'clock P.M., Jacks and Mules, Book 14; at 2 P.M., General Purpose Horses, Book 3.

Wednesday, September 11.—At 10 o'clock A.M., Draft Horses, Book 4; at 11 A.M., Matched Horses, Book 7; at 1 P.M., Geldings and Mares for Light Harness, Book 5; at 2 P.M., Trotting Matched Roadsters and Trotting Horses, Mares, and Geldings, 4 years old, Book 10; Runners, Book 9.

Thursday, September 12.—At 10 o'clock A.M., Thoroughbreds, Book 1; at 11 A.M., Roadsters, Book 2; at 1 P.M., Saddle Horses, Book 6; at 2 P.M., Trotting Stallions and Trotting Mares or Geldings, Book 8.

Friday, September 13.—At 10 o'clock A.M., Draft Sweepstakes, Book 13; at 11 A.M., Thoroughbred and Roadster Sweepstakes, Book 12; at 1 o'clock P.M., Grand Parade in front of the grand stand in the horse-ring, of all the premium animals; at 2 P.M., Trotters and Pacers, Book 11.

IN THE CATTLE-RING.

Tuesday, September 10.—At 1 o'clock P.M., Devons, Book 16; at 3 P.M., Herefords, Book 17.

Wednesday, September 11.—At 10 o'clock A.M., Alderneys or Jerseys, Book 18; at 11

A.M., Ayrshires, Book 19; at 12 M., Dairy Stock, Book 21; at 1 P.M., Oxen and Steers, Book 22; at 1½ P.M., Fat Cattle, Book 22; at 2 P.M., Shorthorn Bulls, Book 15.

Thursday, September 12.—At 10 o'clock A.M., Shorthorn Cows, Book 15; at 1 P.M., Breeder's Herd, Book 23; at 2 P.M., Sweepstake Devons, Book 25; at 4 P.M., Sweepstake Ayrshires, Book 26; at 5 P.M., Sweepstake Alderneys and Jerseys, Book 27.

Friday, September 13.—At 10 o'clock A.M., Sweepstake Herd, Book 24; at 1 o'clock P.M., Grand Parade, in front of grand stand in the horse-ring, of all the premium animals. See Books 25 and 26.

SHEEP.

Tuesday, September 10.—At 1 o'clock P.M., Southdown and Fat Sheep, Book 30.

Wednesday, September 11.—At 10 o'clock A.M., and 1 P.M., Merinos, Book 28.

Thursday, September 12.—at 10 o'clock A.M., Long Wools, Book 29; at 2 P.M., Sweepstakes on Fine Wools, Book 31.

Friday, September 13.—At 1 o'clock P.M., Sweepstakes on Long Wools, Book 32.

SWINE.

Tuesday, September 10.—At 1 o'clock P.M, White Breeds, Book 34.

Wednesday, September 11.—At 10 o'clock A.M., Poland China, Book 35; at 2 P.M., Berkshires, Book 33.

Thursday, September 12.—At 10 o'clock A.M., Essex, Book 36; at 1 P.M., Sweepstakes, Book 37.

POULTRY.

Thursday, September 12.—At 10 o'clock A.M., Book 38.

SECOND DEPARTMENT.

Wednesday, September 11.—At 10 o'clock A.M., Plows, Drills, and Cultivators, Books 45 and 46.

Thursday, September 12.—At 10 o'clock A.M., Hay and Harvesting Machines, Book 42, and Agricultural Machines, First Division, Book 43; at 12 M., Agricultural Machines, Second Division, Book 44; at 1 o'clock P.M., Machinery, Engines, etc., Book 40; at 3 P.M., Shop Machinery, Book 41.

THIRD DEPARTMENT.

Wednesday, September 11.—At 10 o'clock A.M., Worked Metals, Book 48; at 1 P.M., Stoves, Castings, etc., Book 49.

Thursday, September 12.—At 10 o'clock A.M., Household Implements, etc., Book 51; at 11 A.M., Glass, Crockery, etc., Book 52, and Chemicals and Minerals, Book 53; at 1 P.M., Vehicles, Book 50.

FOURTH DEPARTMENT.

Wednesday, September 11.—At 10 o'clock A.M., Household Fabrics, Book 55; at 10 A.M., Crochet and other Ornamental Work, Book 58; at 11 A.M., Needlework, etc., Book 56; at 1 P.M., Braiding and Embroidery, Book 57; at 1 P.M., Cabinet Ware, Book 59; at 2 P.M., Leather Manufactures, Book 64, and Stationer's Ware, Book 61.

Thursday, September 12.—At 10 A.M., Factory Goods, Book 60; at 2 P.M., Boots, Shoes, etc., Book 63; at 2 P M., Merchants' and Dealers' Class, Book 62.

FIFTH DEPARTMENT.

Wednesday, September 11.—At 10 o'clock A.M., Flour, Grain, etc., Book 68; at 1 P.M., Cheese, Book 69, and Sweepstake on Cheese, Book 70; at 2 P.M., Butter, Bread, etc., Book 71.

Thursday, September 12.—At 10 A.M., Honey, Pickles, and Preserves, Book 72, and Potatoes, Book 73; at 11 A. M., Vegetables, Book 74.

SIXTH DEPARTMENT—IN FRUIT HALL.

Wednesday, September 11.—At 10 A.M., Summer and Fall Apples, Book 76, and Peaches, Quinces, and Plums, Book 79; at 11 A.M., Winter Apples, Book 77, and Pears, Book 80; at 1 P.M., Plate Apples, Book 78.

Thursday, September 12.—At 10 o'clock A.M., County Fruits, Book 81; at 2 P.M., Grapes, Book 82.

IN FLORAL HALL.

Wednesday, September 11.—At 10 o'clock A.M., Cut Flowers, Amateur List, Book 86; at 2 P.M., Cut Flowers, Professional List, Book 85.

Thursday, September 12.—At 10 o'clock A.M., Plants and Flowers, Professional List, Book 85; at 1 o'clock P.M., Amateur List, Book 86.

IN FINE ART HALL.

Wednesday, September 11.—At 2 o'clock P.M., Philosophical Instruments, etc., Book 89.

Thursday, September 12.—At 10 o'clock A.M., Paintings and Drawings, Book 87; at 1 P.M., Sculpture, etc., Book 88.

Friday, September 13.—At 10 o'clock A.M., Musical Instruments, Book 90.

RULES AND REGULATIONS.

I. Entries *must* specify the owner's name, and the *name*, age, sex, and description of the animal offered; age of horses to date from the first of January of the year foaled.

II. No animal to be entered in the name of any other than the *bona fide* owner. Matched horses must be owned by an individual exhibiter, or a business firm. Should any be otherwise entered, they will forfeit to the Society any premium awarded by the Judges.

III. An animal entered for exhibition in one class can not compete for a premium in any other, except in Trotters and Sweepstakes, and in Rule IV.

IV. A single animal may be exhibited as one of a pair or herd.

V. Each horse shall be exhibited to the satisfaction of the Awarding Committee.

VI. Exhibiters are required to have their articles entered on the books at the Secretary's office before they are placed within the enclosure. On the entry of the articles, duplicate cards will be furnished, with the number and class as entered at the office, one of which is to be placed on the article to be exhibited, and the other will be retained by the exhibiter until the close of the Fair, and, on presentation to the Superintendent in charge of the department, will be an order for the articles corresponding in number.

VII. Exhibiters must *see to the delivery* of their articles upon the grounds, and to the *Superintendent of the appropriate department;* and the Society can not in any case make provision for their transportation, or be subjected to any expense therefor, either for their delivery at or return from the grounds; but all expenses connected therewith must be provided for *by the exhibiter.*

VIII. Persons exhibiting thoroughbred animals will be required to furnish a pedigree of the animals to be exhibited, to the Secretary, at the time of making the entry, and a duplicate to the member of the Board in charge when the animals are exhibited to the Committee. For the convenience of exhibiters, reference may be made to the number in the Herd or Stud Book, instead of giving the full written pedigree.

IX. Evidence will be required that animals exhibited as *Breeders* are not barren, and no award shall be made where there is unsoundness in breeding animals, if there is any question as to its transmissibility.

X. No person other than the Judges will be permitted to go into the ring where stock is exhibited, except the officers of the Society or the superintendents.

XI. No stock will be permitted to enter the ring unless under halter, and in care of a groom.

XII. Horses, Cattle, and Sheep will be exhibited in the ring prepared for the purpose, and the premium ribbons or cards attached by the Judges before leaving the enclosure. *First Premium*—RED. *Second Premium*—BLUE.

XIII. No animals or articles shall be removed before the close of the exhibition without the permission of the member of the Board in charge of the department in which the article is exhibited. Every exhibiter will be required to have his articles on the grounds by Tuesday, and if delayed beyond 9 o'clock A.M. of that day, *they can not, without the consent of the Board, come in competition for premiums.*

XIV. The State Board will take every precaution in its power for the safe preservation of stock and articles on exhibition *after* their arrival and arrangement upon the grounds, but will not be responsible for any loss or damage that may occur. Exhibiters are desired to give attention to their articles, and at the close of the Fair to attend to their removal.

XV. If any disrespect is shown to the award, or to the awarding committee, by the exhibiter or his agent, he shall forfeit all the awards made to him, and the member in charge shall report the same to the Board at its first subsequent meeting

FORAGE FOR STOCK.—For the convenience of exhibiters, hay and straw will be supplied upon the grounds, without charge, during the week of the Fair, in the following quantities per day: "Cattle, 20 pounds; horses, 15 pounds; sheep, 3 pounds; and straw sufficient for bedding. If animals are entered for competition, and not exhibited in the ring in the class in which they were entered, they will be charged at the rate of one dollar per day for use of stalls.

Arrangements have been made with a responsible party to furnish oats and corn on the grounds at market prices, in quantities to suit purchasers.

GENERAL INSTRUCTIONS TO COMMITTEES.

I. The Committeemen are requested to report themselves to the Treasurer at the entrance gate, and he will direct them to the member in charge of the department in which they are to serve, in order that they may be furnished with an appropriate insignia that will admit them on the grounds during the Fair.

II. No person who is an exhibiter can act as Committeeman on the class in which he exhibits, or upon stock or articles in which he has an interest.

III. *When articles or animals are not deemed worthy, the Committee will refuse to award a premium.*

IV. No person will be allowed to interfere with the Committees during their adjudications; and any person who, by letter or otherwise, attempts such an interference, will be excluded from competition, and if the Board are satisfied that a premium has been obtained by fraud, then such premium shall be withheld.

V. Committees will report the animals entitled to premiums only. Committees shall ballot for *first* award, without previous consultation.

VI. If there is not a majority agreeing on the first ballot, then the members of the Committee will compare views as to the relative merits of the animals, without expressing individual preferences, and a second ballot then will be taken.

VII. If, after balloting, the Committee is satisfied that no agreement on award of premium can be had, then the members in charge will add another person to the Committee, and his award shall be confined to the animals only that have received ballots from the original Committee.

VIII. Any animals or articles which, in their opinion, deserve a special commendation, will be so reported.

IX. If there be any question as to the regularity of an entry, or the right of any animal or article to compete in the class, the Committee shall report the same to the member in charge for adjustment.

X. The Committee on Fat Cattle will give particular attention to animals submitted for examination. It is believed that, all other things being equal, those are the best cattle that have the greatest weight in the smallest superficies. The Committee will require all the animals in this class to be weighed on the scales on the grounds, and will take measures to give the superficies of each in the reports. *Before awarding the premiums, the Committee will require of the competitors full statements as to the manner and cost of feeding.*

REPORTS.

The Committees will be expected to give the *reasons for their decisions*, embracing the valuable and desirable qualities of the animals or articles to which the premiums are awarded. And, as the one great object of the Society is to collect valuable information upon subjects connected with Agriculture, the several Awarding Committees are requested to gather all the information possible from exhibiters, in their respective departments, and make their report as full as circumstances will permit.

The Committee will make its report of awards to the member in charge as early as possible after making the awards.

A copy of the entry-book will be given to the Chairman of the Committee, if he desires, so that he may write a full report, embracing the reasons upon which the awards were made, which shall be forwarded to the Corresponding Secretary within thirty days from the close of the Fair.

DISCRETIONARY PREMIUMS.

No Awarding Committees shall award any discretionary premiums. Whenever articles of superior merit are exhibited, for which no premiums have been offered, the Awarding Committee may enter the same on the book of awards, so that the Secretary may report the same to the Board for further action.

Awarding Committees must not attach premium cards to articles for which no premiums are offered. Awarding Committees may attach *commended* cards to such articles as in their judgment deserve commendation, and make an entry of the same in the book.

PAYMENT OF PREMIUMS.

Premiums are payable in cash, if desired, except where medals or diplomas are specified. The diplomas and medals will be delivered at the State Agricultural rooms in the State House, in Columbus, as soon as they can be prepared or engraved, or will be forwarded, as directed, to the proper persons by the Secretary. Premiums will be paid by the Treasurer only on the order of the President and Secretary, and will be delivered, on application, after *ten* days after the Fair. These orders must be indorsed by the party to whom they are made payable.

All premiums awarded must be claimed prior to the first of January, 1879, or they will be deemed forfeited.

In any case, a premium having been awarded on any single animal or article of $10 or upwards, it shall be optional with the exhibiter to receive either *silver plate or medal,* suitably engraved, or the money.

STATEMENTS TO BE FURNISHED BY APPLICANTS FOR PREMIUMS ON FARM CROPS.

I. The land shall be measured by some competent person, who shall make affidavit of the accuracy of the measurement and the quantity of ground.

II. The applicant shall make affidavit, according to the forms annexed, to the quantity of grain raised on the ground entered on the premium list, which affidavit must accompany the application for premiums, together with a sample of the grain.

The main object of the Society being to promote profitable cultivation, it does not propose to offer premiums for crops produced by extravagant expenditure; therefore, a detailed, certified account of the expenses of cultivation must be made. The expense of labor and manure should be particularly stated, and the kind of manure used. The statement must be in the following form:

To —— loads manure, at $—— per load, $——
To —— days plowing, at $—— per day, $——
To —— " labor, $—— " $——
To —— days' harvesting, at $—— per day, $——
To —— " marketing, ... $——

And thus each item of expense incurred in the cultivation and marketing of the various crops upon which premiums are applied for must be fully stated.

The kind and condition of the soil, the quality and kind of seed used, the time and mode of putting it in the ground, should be particularly stated.

Samples of grain and vegetables produced to be exhibted at the State Fair, where practicable, and also to be sent to the rooms of the Board at the January meeting.

III. All the grain grown on the entire piece of land measured must be either all weighed or measured, *and not the product of a square rod or two weighed and the remainder guessed at.*

FORM OF AFFIDAVITS.

——— County, ss. A. B. being duly sworn, says he accurately measured the land upon which C. D. raised a crop of ——— the past season, and the quantity of land is ——— acres, and no more.

Sworn to before me this —— day of ———, 1877.

——— ———, *Justice.*

——— County, ss. C. D. being duly sworn, says that he raised a crop of ——— the past season, upon the land measured by A. B., and the quantity raised thereon was ——— bushels, and no more, weighed (or measured in a sealed half bushel, as the case may be), and that the statements in regard to the manner of cultivation, etc , are correct to the best of his knowledge.

Sworn to before me, this —— day of ———, 1877.

——— ———, *Justice.*

FLAGS IN THE HORSE RING.

During the exhibition of horses in the ring, each class will be indicated by a flag, run up on the judges' stand, as follows:

Red flag indicates Thoroughbreds, Book 1.
White flag indicates Roadsters, Book 2.
Green flag indicates General Purpose, Book 3.
Blue flag indicates Draft, Book 4.
Yellow flag indicates Matches, Book 7.
Red and white flag indicates Trotters, Book 5.
National flag indicates Runners.

National flag, with any other flag, calls for Sweepstakes of the class represented by such other flag; thus, a National flag and a Blue flag calls for Draft Sweepstakes.

All horses in the class, from the aged stallion down to and including colts, must be brought into the ring when the flag goes up. When they have been exhibited, mares down to sucklings must be brought in.

PREMIUMS OFFERED AT OHIO STATE FAIR, 1878.

	Amount of cash.	Number of medals.	Number of diplomas.
HORSES.			
Thoroughbreds	$271 00	......	......
Roadsters	256 00	......	......
General purpose	190 00	......	......
Draft	271 00	......	......
Geldings and mares for light harness	66 00	......	......
Saddle horses	30 00	......	......
Matched horses and mares	135 00	......	......
Single trotters	300 00	......	......
Runners	175 00	......	......
Single and matched trotters	250 00	......	......
Trotting and pacing sweepstakes	450 00	......	......
Thoroughbred and roadster sweepstakes	140 00	......	......
Draft sweepstakes	140 00	......	......
Jacks and mules	85 00	......	......
Total	$2,759 00	......	......
CATTLE.			
Shorthorns	$500 00	......	......
Devons	179 00	......	......
Herefords	90 00	......	......
Jerseys	115 00	......	......
Ayrshires	115 00	......	......
Hollanders or Holsteins	90 00	......	......
Dairy stock	120 00	......	......
Work oxen, steers, and fat cattle	255 00	......	......
Sweepstakes, breeder's herd	275 00	......	......
" exhibiter's herd	210 00	......	......
Devon sweepstakes	60 00	......	......
Ayrshire "	60 00	......	......
Jersey "	60 00	......	......
Total	$2,129 00	......	......
SHEEP.			
Merinos	$320 00	......	......
Long wools	129 00	......	......
Middle wools and fat sheep	150 00	......	......
Sweepstakes on fine wools	105 00	......	......
" long wools	55 00	......	......
Total	$759 00	......	......

PREMIUMS OFFERED AT OHIO STATE FAIR, 1878—Continued.

	Amount of cash.	Number of medals.	Number of diplomas.
SWINE.			
Berkshires	$217 00	......	......
Poland chinas	207 00	......	......
Chester whites	212 00	......	......
Essex	35 00	......	......
Suffolk	35 00	......	......
Sweepstakes	65 00	......	3
Totals	$771 00	......	3
POULTRY.			
Poultry	$278 00	......	......
MACHINERY, AGRICULTURAL IMPLEMENTS, ETC.			
Machinery, engines, etc	$169 00	......	3
Shop machinery	122 00	1	8
Hay and harvesting machines and tools	66 00	......	6
Agricultural machines (1st Div.)	74 00	3	......
Agricultural machines (2d Div.)	86 00	4	1
Drills and cultivators	39 00	1	10
Plows	92 00	8	2
Totals	$648 00	17	30
MECHANICS' AND MANUFACTURERS' PRODUCTS.			
Worked metals	$181 00	......	......
Stoves, castings, etc	79 00	1	......
Vehicles	173 00	......	2
Household implements, etc	106 00	......	......
Glass, crockery, etc	61 00	......	......
Minerals and chemicals	111 00	......	......
Totals	$711 00	1	2
TEXTILE FABRICS AND DOMESTIC MANUFACTURES.			
Household fabrics	$79 00	......	......
Needle-work	103 00	......	......
Braiding and embroidery	93 00	......	......
Crochet and other ornamental work	102 00	......	......
Cabinet ware	205 00	1	2
Factory goods	177 00	......	......
Stationers' ware	48 00	......	......
Merchants' and dealers' class	103 00	......	......
Boots and Shoes	29 00	......	......
Leather manufactures	70 00	......	......
Totals	$1,009 00	1	2
FARM PRODUCTS.			
Field crops	$300 00	......	......
Wheat	1,000 00	......	......

PREMIUMS OFFERED AT THE OHIO FAIR, 1878—Continued.

	Amount of cash.	Number of medals.	Number of diplomas.
Flour, grain and seeds	$225 00	......	1
Cheese	76 00	1	......
Butter, bread, etc	94 00	......	......
Honey, preserves and pickles	102 00	......	......
Potatoes	71 00	......	......
Vegetables	145 00	......	......
Totals	$2,013 00	1	1
FRUITS.			
Summer and fall apples	$43 00	......	......
Winter apples	76 00	......	......
Plate apples	62 00	......	......
Peaches, quinces and plums	53 00	......	......
Pears	112 00	......	......
County fruits	65 00	......	......
Grapes and native wines	117 00	1	......
Totals	$528 00	1	......
FLOWERS AND FINE ARTS.			
Plants and flowers (professional list)	$279 00	......	......
Plants and flowers (amateur list)	266 00	......	......
Drawings, paintings, etc	305 00	2	20
Sculpture	75 00	......	......
Instruments, philosophical, etc	....	1	25
Totals	$925 00	3	45
EXTRAORDINARY.			
Speed	$690 00	......	......
Floral	185 00	......	......
Total	$875 00	......	......
SUMMARY.			
Horses	$2,759 00	......	......
Cattle	2,129 00	......	......
Sheep	759 00	......	......
Swine	771 00	......	3
Poultry	278 00		......
Machinery and agricultural implements	648 00	17	30
Mechanics' and manufactures' products	711 00	1	2
Textile fabrics and domestic manufactures	1,009 00	1	2
Farm products	2,013 00	1	1
Fruits	528 00	1	......
Flowers and fine arts	925 00	3	45
Extraordinary	875 00	......	......
Totals	$13,405 00	24	83

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ENTRIES, AWARDS, AND COMMITTEE REPORTS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
HORSES—THOROUGHBREDS.			
Stallions 4 years and over.			
O. P. Chaney, Canal Winchester	Enterprise	1st	$40
J. V. Smith, Perrysville	Frank Boston	....	....
B. M. Beal, New Castle	Paymaster	....	....
Mahoy & Greenless, South Solon	Bastian	2d	20
Stallions 3 years and under 4.			
O. P. Chaney, Canal Winchester	Jack	1st	20
Mahoy & Bros, South Solon	Oriole	2d	10
Stallion 2 years and under 3.			
John Reber, Lancaster	Corrella	1st	15
Stallion 1 year and under 2.			
Mahoy & Bros, South Solon		1st	10
Mares 4 years and over.			
O. P. Chaney, Canal Winchester	Vienna	....	....
H. J. Biddleman, Columbus	Maggie Shields	1st	30
P. A. Graves, Hartford	Bertie May	2d	15
J. F. Lanman, Xenia	Lucy Wolcott	....	....
Mare 3 years and under 4.			
John Reber, Lancaster	Lady Middletown	1st	20
Mare 2 years and under 3.			
Mahoy & Bros., South Solon	Lady Bastian	1st	15
Filly 1 year and under 2.			
Henry C. Taylor, Columbus	Louise Gwynne	1st	10
Brood mare with foal by her side.			
O. P. Chaney, Canal Winchester	Resada	1st	20
ROADSTERS.			
Stallions 4 years and over.			
St. Joseph's Institute, Somerset	Whitefoot	2d	20
Thomas Evans, Newark		....	....
Wm. McCloy, Wilmington	Maggie	....	....
S. A. Foulk, Urbana	Doctor Almont	....	....
" "	Bashaw Star	....	....
" "	Orion	....	....
W. B. Hall & Co., Shaler's Mills	Mohawk Chief	1st	40
Thomas Lee, Middletown	The Banker	....	....
B. H. Colgrove, Sharpsburg, Ky	Kentucky Woful	....	....

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Stallions 3 years and under 4.			
O. P. Chaney, Canal Winchester	George	2d	$10
“ “	“		
Adams & Chase, Mt. Gilead	Billy Bysdyke		
“ “	Salmon P		
M. L. Kissell, Springfield	Lagonda Chief		
Jacob Wyscarber, Batesville	Jerry		
Charles Pratt, South Charleston	Frank	1st	20
Stallion 2 years and under 3.			
C. A. McMullen, Milford Center	Mohawk		
Edwin Wright, Alexandria	Bay Dick		
Dr. Grace, Chillicothe	Baker Pasha	1st	15
Jacob Wyscarber, Batesville	2d Duke of Brunswick		
W. D. McKey, Fredericktown	Red Cloud		
Thomas Lee, Carrollton	Edwin Forrest, Jr		
J. B. Stewart, Flint	Abdallah		
Israel Dum	Sleepy John		
Riddle & Norris, Petersburg	Eurinza		
Wm. Burns, Springfield	Robt. Burns	2d	8
Mares 4 years and over.			
Whitlinger & Jamison, Delaware	Delaware Maid		
St. Joseph's Institute, Somerset			
John Reber, Lancaster	Lady Richmond		
Adams & Chase, Mt. Gilead	Kate Adams		
“ “	Kate Chase		
Geo. D. Chapman, Columbus	Flora Clay	2d	15
Robt. Dean, Columbus			
N. M. Runyan, Marion	Ohio Girl		
E. M Strode, Groveport	Daisy		
W. M. Yeazle, Springfield	Fashion	1st	30
Mares 3 years and under 4.			
O. P. Chaney, Canal Winchester			
“ “			
D. R. Harness, Chillicothe	Daisy		
Chas. Talbot, Columbus		2d	10
Jas. Clarke, New Moorfield	Jessie	1st	20
Mares 2 years and under 3.			
D. S. Elliott, Alton	Lady Kerns	2d	8
Filly 1 year and under 2.			
A. H. Foster, Alexandria		1st	10
Brood mare with foal by her side.			
Thos. Postle, Camp Chase	Jane		
G. W. Kenan, Upper Sandusky		1st	20
J. T. Handley, Reynoldsburg			

ENTRIES, AWARDS, ETC.—Continued.

Owner's name, and post-office.	Name of animal.	Premium	Amount.
HORSES FOR GENERAL PURPOSES.			
Stallions 4 years and over.			
O. P. Chaney, Canal Winchester	Mambrino Tranby	1st	$30
Christ. Hempy, Lancaster	Royal Prince		
John H. Mellinger, Springfield	Pegasus		
James Chestnut, Camp Chase	Blangus, Jr		
S. J. Truesdell, Chesterville	Abdallah, Jr	2d	15
E. M. & M. L. Kissell, Springfield	Black Hawk		
Steph. Hoskins, Newark	Franklin		
S. A. Foulk, Urbana	General Harris		
Thomas Lee, Carrollton	Henry Forrest		
D. W. Reed, Middletown	Joe Hooker		
James Riddle, Hebron, Ky	Hedgeford		
" "	Clifton		
Stallions 3 years and under 4.			
O. P. Chaney, Canal Winchester			
Daniel Swisher, "			
James T. Miller, Marble Cliff	General		
J. A. Green, Columbus	Dexter	2d	10
James Fippin, Camp Chase	Tob		
R. Bailey, Darbyville	Longfellow		
W. C. Briggs, Columbus	Dick		
R. C. Stewart, Seven Mile	John Gilpin	1st	20
Stallion 2 years and under 3.			
J. B. Stewart, Flint	Abdallah		
Mares 4 years and over.			
J. B. Stewart, Flint	Flora		
Henry Johnson, Lancaster	Order Girl		
James Shook, "	Lady Marksman		
William Miller, Condit			
Geo. D. Chapman, Columbus	Queen of Sheba		
N. M. Runyan, Marion	Queen	2d	15
A. C. Stewart, Seven Mile	Jennie	1st	25
Jos. McKitrick, Jerome			
" "			
Mares 3 years and under 4.			
O. P. Chaney, Canal Winchester		1st	20
A. H. Foster, Alexandria			
Robert Gebbert, Chillicothe	Belle		
Mahoy & Bros, South Solon			
Mares 2 years and under 3.			
P. N. Gray, Ashville	Nettie		
J. B. Stewart, Flint			
Mahoy & Bros., South Solon		2d	5
Jas. Riddle, Hebron, Ky		1st	10

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Brood mare with foal by her side.			
B. F. Elliott, Alton	Petty Boone	2d	$10
A. H. Foster, Alexandria			
A. C. Stewart, Seven Mile			
DRAFT.			
Stallions 4 years and over.			
Hossock & Silliman, Fredericktown	Crown Prince		
O P. Chaney, Canal Winchester	Bonnie Clyde		
Jas. T. Miller, Marble Cliff	George	2d	20
Taylor & Jones, Plain City		1st	40
Lloyd & Jones, Hilliard			
P. B. Watkins, Columbus	Dill Wiggins		
Samuel Wright, Canal Winchester	Frank		
S. A. Foulk, Urbana	Duke de Charte		
“ “	Governor		
Jas. E. Townley, Cedarville	Brilliant		
Stallions 3 years and under 4.			
David Postle, Camp Chase		1st	20
David McClung, Plain City	Belgium	2d	10
Geo. Sellers, Cardington	Gray Frank		
Stallions 2 years and under 3.			
Wm. Emerson, Fredericktown	Crown Prince, Jr	1st	15
Levi Kidder, Woodstock		2d	8
Stallions 1 year and under 2.			
Daniel Vernon, Fredericktown		2d	5
David Bulliard, “		1st	10
Lyman Smith, Dublin			
J. T. Gray, Columbus			
Levi Kidder, Woodstock			
Mares 4 years and over.			
P. W. Gray, Ashville	Diamond		
C. A. McMullen, Milford Center	Cruiser		
B. F. Elliott, Alton		2d	15
Jas. T. Miller, Marble Cliff	Belle	1st	30
Jos. McKitrick, Jerome			
“ “			
W. J. Harbert, Ostrander	Queen		
Mares 3 years and under 4.			
Isaac T. Blum, Sunbury			
C. A. McMullen, Milford Center	Kate	1st	20
W. H. Yeazle, Jr., Springfield			
C. M. Jones, Plain City			
Jas. McCloud, “		2d	10
J. T. Blum, Sunbury			
B. F. Bowdre, New Dover	Clyde		

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Mares 2 years and under 3.			
W. F. Foote, Fredericktown			
C. A. McMullen, Milford Center	Jane		
Samuel Taylor, Plain City			
" "		1st	$15
James Chapman, Plain City			
Philo Gray, Commercial Point	Mina Gray		
Dow Martin, Woodstock		2d	8
Filly 1 year and under 2.			
Wilbor Moore, Fredericktown			
Wm. Emerson "		1st	10
C. A. McMullen, Milford Center	Sallie		
J. T. Handley, Reynoldsburg			
Brood mare with foal by her side.			
C. A. McMullen, Milford Center	Nell		
John Major, West Jefferson		2d	10
" "			
J. L. Bowman, Canal Winchester	Topsy		
Robert Price, Bloomfield			
G. W. Handley, Richwood		1st	20
B. F. Bowdre, New Dover			
GELDINGS AND MARES FOR LIGHT HARNESS.			
Mares or geldings 4 years and over.			
David Postle & Son, Camp Chase	Jerry Hardwick		
C. K. Cunningham, Cardington			
John Reber, Lancaster	Lady Richmond	2d	10
C. M. Bosworth, Wilmington	Eagle Plume	1st	20
J. T. Blum, Sunbury	Tom		
O. P. Chaney, Canal Winchester	Donk		
James Chestnut, Camp Chase	Bill		
A. H. Darling, Bladensburg	Abbie Darling		
David Williams, Columbus	Frank		
Robt. Dean, Columbus			
Mr. Strader, Commercial Point			
A. H. McBriar, Columbus			
Smith Barrett, Westerville	Honest Jim		
Mares or geldings 3 years and under 4.			
Christ. Hempy, Lancaster	Buckeye Boy	2d	8
O. P. Chaney, Canal Winchester			
Chas. Talbot, Columbus		1st	15
SADDLE HORSES			
Horses, mares, or geldings for saddle.			
St. Joseph's Institute, Somerset			
Wm. Barton, Condit	Black Ben		
Wm. McCloy, Wilmington	Jim		
Ed. Van Meter, Bloomfield	Bruce	2d	10
R. Bailey, Darbyville	Smuggler		

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Horses, mares, or geldings for saddle.—Continued.			
H. C. Chappelear, Hopewell	Minnie	....	....
Riddle & Norris, Petersburg, Kentucky	Hedgeford	1st	$20
" " "	Clifton	....	....
MATCHED HORSES AND MARES.			
Pair of coach geldings or mares.			
A. R. Critchfield, Howard		1st	15
Geo. Reterer, Marion		....	....
Pair farm or draft geldings or mares.			
D. S. Elliott, Alton		2d	15
J. T. Handley, Reynoldsburg		1st	30
A. T. Gill, Hilliard		....	....
B. F. Bowdre, New Dover		....	....
C. A. McMullen, Milford		....	....
Pair light harness geldings or mares.			
J. W. Townsley, Jamestown		....	....
Geo. D. Chapman, Columbus	Queen of Sheba and Flora Clay	1st	30
H. C. Chappelear, Hopewell		2d	15
J. B Stewart, Flint		....	....
SINGLE TROTTERS.			
Trotting stallions that has made a regular season for mares during the spring of 1878, *and owned in Ohio.*			
Wm. McCloy, Wilmington	Magic	3d	25
Thos. Lee, Carrollton	The Banker	....	....
John Lee Paste, Galion	Mohawk Jackson	2d	50
W. B. Hall, Shaler's Mills	Mohawk Chief	1st	75
RUNNERS.			
Running horse, mare, or gelding.			
John Reber, Lancaster	Lady Middleton	2d	50
Armstrong & Smith, Mt. Vernon	Frank Boston	3d	25
Dr. Grace, Chillicothe	Index	1st	100
B. & M. Beal, New Castle	Paymaster	....	....
P. A. Graves, Croton	Bertie May	....	....
J. P. Biddleman, Columbus	Maggie Shields	....	....
SINGLE AND MATCHED TROTTERS.			
Trotting horse, mare, or gelding, not over 4 *years old.*			
Jas. M Clark, jr., Springfield	Claudius	....	....
John Reber, Lancaster	Lady Richmond	3d	37½
H. S. Comstock, Columbus	Frolic	....	....
John D. Clark, Springfield	Lady Clark	1st	75
Wm. Whitlinger, Delaware	Delaware Maid	2d	37½

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Pair of matched roadsters.			
Wm. McCloy & Co, Wilmington	Magic and mate	3d	$10
Albert Field, Ashtabula	Little Jake and Loafer	1st	60
N. M. Runyan, Marion	Ohio Girl and mate		
Chas. H. Barth, Columbus	Queen of Sheba & Flora Clay	2d	30
TROTTING AND PACING SWEEPSTAKES.			
Trotting horse, mare, or gelding.			
Jno. Hines, Minerva	Silversides	1st	50
W. M. Yeazel, Springfield	Billy Yeazel	2d	30
W. P. Kinzer, Mansfield	Deception	3d	20
C. A. Palmer, Washington	Rip-rap	4th	10
Pacing horse, mare, or gelding.			
A. T. Tallman, Marysville	Billy Scott	2d	50
S. C. Phillips, Xenia	Sleepy Tom	1st	100
Jas. Alexander, Columbus	Nellie Gray	3d	25
SWEEPSTAKES FOR THOROUGHBREDS AND ROADSTERS			
Thoroughbred or roadsters stallions, with five of his colts.			
O P. Chaney, Canal Winchester	Mambrino Tranby		
Mahoy & Greenless, South Solon	Bastian	1st	50
Stallion any age or breed other than draft.			
Chris. Hempy, Lancaster	Royal Prince		
W. D. McKey, Fredricktown	Red Cloud		
R. C. Stewart, Seven Mile	John Gilpin	1st	50
D. W. Reed, Middletown	Kentucky Woful		
Mahoy & Greenless, South Solon	Bastian		
Mares any age or breed other than draft.			
John Reber, Lancaster	Lady Richmond		
O. P. Chaney, Canal Winchester	Vienna		
A. H. Darling, Bladensburg	Abbie Darling		
John Reber, Lancaster	Lady Middletown	1st	40
DRAFT SWEEPSTAKES.			
Draft stallion, with five of his colts.			
Taylor & Jones, Plain City			
Hossack & Silliman, Fredricktown	Crown Prince	1st	50
Draft stallion any age.			
Hossack & Silliman, Fredricktown	Crown Bruce	1st	50
Taylor & Jones, Plain City	Sir Robert Prince		
Jas. T. Miller, Marble Cliff	George		

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Draft mare any age.			
W. H. Yeazel, Springfield			
B. F. Elliott, Alton			
John Major, West Jefferson			
W. J. Harbert, Ostrander		1st	$40
Sam. Taylor, Plain City	Amanda		
Jas. McCloud, “	Nellie Clyde		
Jas. T. Miller, Marble Cliff	Belle		
Chas. McMullen, Milford Centre	Kate		
JACKS AND MULES.			
Jack of any age.			
Jerome Drais, Washington C. H		1st	15
M. S. Sheets, Westerville			
Pair of mules 3 years and over.			
Jerome Drais, Washington C. H		2d	10
“ “		1st	20
Mule 2 years and over.			
Jerome Drais, Washington C. H		2d	7
“ “		1st	10
Mule 1 year and under 2.			
Jerome Drais, Washington C. H		1st	8
“ “			
SPEED PREMIUMS EXTRAODINARY.			
2:30 *Class.*			
B. H. Colgrove, Sharpsburg, Kentucky	Whipple		
J. S. Campbell, Murphysboro, Illinois	Essex Maid	1st	100
W. M. Yeazel, Springfield	Fashion		
E. M. Strode, Groveport	Red Oak	2d	60
Albert Field, Ashtabula	Little Jake	3d	20
2:40 *Class.*			
David Postle & Son, Camp Chase	Jerry Hardwick	2d	50
J. D. Clark, New Moorfield	Lady Clark	3d	25
O. P. Chaney, Canal Winchester	Donk		
Albert Field, Ashtabula	Loafer	1st	75
N. M. Runyan, Marion	Ohio Girl		
Wm. H. McConnel, Columbus	Black Cloud		
RUNNERS.			
J. Biddleman, Columbus	Maggie Shields	2d	30
A. T. Tallman, Marysville	Bertie May	2d	10
Jno. Reber, Lancaster	Lady Middleton	1st	60
3 *Minute Class.*			
Martin Walls, Columbus	Jno. Reber		
David Postle & Son, Camp Chase	Jerry Hardwick	1st	75
Wm. Greeno, Circleville	Outlaw	2d	50
W. Baker, Columbus	Gold Dollar		
Jas. Clark, New Moorfield	Claudine		
Wm. Whitlinger, Delaware	Delaware Maid	3d	25

CATTLE.—PEDIGREES, ENTRIES, AND AWARDS.

SHORTHORNS.

Owner.	Post-office.	Name and number of animal.
		Bulls 3 years and over.
H. Connett	Salina	Duke of Athens, 22,667
M. B. Robertson	Sonora, Muskingum Co	Forest Napier, 17,109
J. Baugh & Sons	Farmers' Institute, Indiana	Breast-Plate 2d, 22,225
J. R Anderson	Anderson	Springdale Airdrie 2d
J. M. Montgomery	Granville	13th Duke of Granville, 16,801
David Selsor	London	Royal Lad 2d, 15,410
Geo. W. Gregg	Circleville	Plumwood F, 24,318
		Bulls 2 years and under 3.
Isaac Mathias	Logan	
same	“	Favorite, 28,283
Geo. W. Gregg	Circleville	Mazurka Judge, (37,086)
		Bulls 1 year and under 2.
M. B. Robertson	Sonora	
J. R. Anderson	Anderson	Queen's Dunmore
David Selsor	London	Wheeler's Profitable
		Bull Calves.
David Selsor	London	Greenwood Duke of Goodness 5th
G. J. Hagerty & Sons	Hanover	Baron Wiley
Anderson DeWitt	Washington C. H	Blucher
		Cows 4 years and over.
J. Baugh & Sons	Farmers' Institute, Indiana	Red Rose of Goodlawn
same	“ “	Nellie Taylor
same	“ “	25th Louan of Woodlawn
J. R. Anderson	Anderson	May Flower
same	“	Sharon Queen 2d
Jno. Montgomery	Granville	10th Louan of Granville
David Selsor	London	Profitable 9th
same	“	Greenwood Louan 15th
same	“	“ “ 17th
G. J. Hagerty & Sons	Hanover	Blue Belle 6th
		Cows 3 years and under 4.
J. R Anderson	Anderson	Maud 3d
John Montgomery	Granville	13th Louan of Granville
David Selsor	London	Profitable 11th
same	“	Greenwood Louan 30th
same	“	1st Belle Duchess of Greenwood
		Cows 2 years and under 3.
J. Baugh & Sons	Farmers' Institute, Ind	Jessie Hopewell, 5th
John Montgomery	Granville	14th Louan of Granville
same	“	Jennie Lind 18th
David Selsor	London	Profitable 13th
same	“	Greenwood Louan 32d
		Heifers 1 year and under 2.
David Selsor	London	Profitable 14th
George W. Gregg	Circleville	Lizzie Sharon 3d
		Heifer Calves.
J. R. Anderson	Anderson	Little Nell
John Montgomery	Granville	21st Louan of Granville
David Selsor	London	Profitable 15th
same	“	Greenwood Louan 35th
George W. Gregg	Circleville	Belle of Walnut
same	“	Nannie Williams
same	“	Emma Sharon
Anderson DeWitt	Washington C. H	Jane Lesley 3d
same	“	Myrtle 5th
same	“	Ida 4th

CATTLE.—PEDIGREES, ENTRIES, AND AWARDS.

SHORTHORNS.

Name and number of sire.	Name of dam.	Name and number of dam's sire.	Premium.	Amount.
Lord Mayor, 6,969	Lida 2d	Marquis, 70,013		
Robert Napier, 8,975	1st Lady of Grassmere	Muscatoon, 7,057		
Breast-Plate, 11,431	Primula	Fallstaff, (21,720)	Second	$25 00
Washington Airdrie, 13,110	Mate	Airdrie 2d, 11,267	First	50 00
3d Duke of Oneida, 11,798	2d Louan of Granville	Duke of Clark, 4,720	Third	15 00
Royal Lad, 9,032	Myrtle	Brummel, 2,792		
20th Duke of Airdrie, 13,873	Plumwood Lass 2d	Boxer, 5,395		
13th Duke of Granville, 16,801	Fanny of Durham Valley	Royal Oakland, 9,034	Second	20 00
Mazurka Duke of Airdrie	Nannie Williams 5th	Duncan's Gen'l Grant, 8,056	First	35 00
Forest Napier, 17,109	Corellie 3d	Duke of Allegheny, 7,881	Third	10 00
Lord Dunmore, 5,405	Sharon Queen 2d	Washington Airdrie, 13,110	Second	15 00
5th Duke of Oneida, 19,558	Profitable 9th	Dan'l Boone, 11,604	First	25 00
29th Duke of Goodness, 26,237	Greenwood Louan 17th	Sir Walter Scott, 9,118	Second	10 00
Barrington, 18,976	Pearl Wood Wiley 3d	Duke of Mason, 9,898	First	15 00
Goldfinder, 7,197	Ida	Young Duke, 5,280	Third	5 00
Sucker Boy, 9,171	Red Bird	Afton, 1,173	Third	10 00
1st Duke of Vermillion, 11,202	Jo 2d	Laudable, 5,870		
1st Duke of Vermillion, 11 202	2d Louan of Woodlawn	Duke of Airdrie, 2,743		
Washington Airdrie, 13,110	Mate	Airdrie, 11,267.	First	40 00
Washington Airdrie, 13,110	Fawn	" "		
3d Duke of Oneida, 11,798	6th Louan of Granville	Royal Oakland, 9,034	Second	25 00
Dan'l Boone, 11,604	Profitable 4th	Sir Robert Alexander, 3,440		
Ben Butler, 7,571	Greenwood Louan 4th	" " "		
Sir Walter Scott, 9,118	Greenwood Louan 9th	Duke of Harrison, 5,565		
Lord Renick, 6,971	Blue Bell	Julian, 3,038		
Washington Airdrie, 13110	Maud 2d	Forest, 18709	Second	20 00
3d Duke of Oneida, 11798	5th Louan of Granville	Royal Duke of Oakland, 977	First	30 00
Dan'l Boone, 11604	Profitable 6th	Duke of Madison, 6665	Third	10 00
" "	Greenwood Louan, 17th	Sir Walter Scott, 9118		
20th Duke of Airdrie, 13872	4th Belle Duchess of Plumwood.	Don Loanjo, 7840		
1st Duke of Vermillion, 11202	Jessie Hopewell, 3d	Sucker Boy, 9171	Second	15 00
3d Duke of Oneida. 11798	5th Louan of Granville	Royal Duke of Oakland, 6977	Third	10 00
13th Duke of Granville, 16891	Jennie Lind 16th	Plantagenet Lad, 12595	First	25 00
4th Duke of Oneida, 19557	Profitable 9th	Dan'l Boone, 11604		
" " "	Greenwood Louan 9th	Duke of Harrison, 5665		
5th Duke of Oneida,, 19558	Profitable 6th	Duke of Madison, 6665	Second	12 00
Plumwood F, 24318	Lizzie Sharon	Airdrie 2d, 11267	First	20 00
Springdale Airdrie 2d	May Flower	Washington Airdrie, 13110	First	15 00
18th Duke of Granville, 28270	10th Louan of Granville	3d Duke of Onieda, 11798		
29th Duke of Goodness, 26237	Profitable 11th	Dan'l Boone, 11604		
" " "	Greenwood Louan 24th	Clifton Duke 3d, 7712	Second	10 00
			Third	5 00
Don Carlos	Lizzie Sharon 2d	Washington Airdrie, 13110		
Goldfinder 17197	Jane Lesley 2d	Sarpedon, 9053		
" "	Myrtle 1st	Imp. John O. Gaunt, (11621)		
" "	Almira	Belmont, 242		

CATTLE.—Pedigrees, Entries, and Awards—Continued.

DEVONS.

Owner.	Post-office.	Name and number of animal.
		Bulls 3 years and over.
Buckingham and Howard	Zanesville, Muskingum Co	Barnemo 2d, 731
J. M. Miller	Hickory, Washington Co., Pa.	Barrister, 734
D. J. Whitmore	Casstown	Barefoot, 732
J. H. Gower	Springfield	Redcoat, 660
		Bulls one year and under two.
D. J. Whitmore	Casstown	Glen Roy
Dr. J. T. McPherson	Cambridge	Scottish Chief
		Bull Calves.
Buckingham and Howard	Zanesville, Muskingum Co	Gold
J. M. Miller	Hickory, Washington Co., Pa.	Leo
Buckingham and Howard	Zanesville, Muskingum Co.	Benny
D. J. Whitmore	Casstown	Lapeer
same	"	Duke of Miami
same	"	Pluto
Dr. J. T. McPherson	Cambridge	Harry
same	"	Governor Morton
		Cows 4 years and over.
Buckingham and Howard	Zanesville, Muskingum Co	Belle Flora, 805
same	" "	Georgia
same	" "	Blue Eyes, 1442
D. J. Whitmore	Casstown	Kitty Clover, 1070
same	"	Rosa, 2029
same	"	Laura 4th, 1827
Dr. J. T. McPherson	Cambridge	Fancy, 1637
D. J. Whitmore	Casstown	Queen Emma, 1216
		Cows 3 years and under 4.
Buckingham & Howard	Zanesville, Muskingum Co.	Nemo Philla 2d, 1954
J. M. Miller	Hickory, Washington Co., Pa.	Belle Patterson 6th, 1432
Frank Ford	Ravenna	Ella
D. J. Whitmore	Casstown	Emma
		Cows or Heifers 2 years and under 3.
Buckingham & Howard	Zanesville, Muskingum Co.	Belle Flora 9th, 1412
D. J. Whitmore	Casstown	Maud
Dr. J. T. McPherson	Cambridge	Lady Belle
		Heifers 1 year and under 2.
Buckingham & Howard	Zanesville, Muskingum Co	Belle Helena 10th
same	" "	Nemo Philla 5th
D. J. Whitmore	Casstown	Winnie
J. H. Gower	Springfield	Lulu
Dr. J. T. McPherson	Cambridge	Rosa
		Heifer Calves.
Buckingham & Howard	Zanesville, Muskingum Co.	Belle Flora 15th
same	" "	Vesper
J. M. Miller	Hickory, Washington Co., Pa.	Luna
D. J. Whitmore	Casstown	Effie

JERSEYS.

		Bulls 3 years and over.
Hoover & Co.	Bradford	Black Prince, 1971
L. Cope	Cardington	Veto, Jr
S. M. Poynts	Maysville, Ky	Kentuck 2d, 758
		Bulls 2 years and under 3.
Frank Ford	Ravenna	Ace of Hearts
S. M. Poynts	Maysville, Ky	Josico, 1235

CATTLE.—Pedigrees, Entries, and Awards—Continued.

DEVONS.

Name and number of sire.	Name of dam.	Name and No. of dam's sire.	Premium	Amount.
Barrena, 425	Nemo Philla, 1170	Imp. Omar Pasha, 1011	Second	$10 00
Jack, 565	Flora 4th, 122	Imp. May Boy, 71	First	20 00
Barrena, 425	Helena 28, 1012	Omar Pasha, 1001		
Olaf. 628	Fulla, 979	Kormak, 576		
Butler, 454	Maggie, 1883	Bounty, 15	First	10 00
Guelph Chief, 888	Flora, 1665	Prince of Wales Tye, 1021	Second	5 00
Breastplate, 762	Rena 3d, 1229	Marylander, 278	Second	4 00
Barrister, 734	Belle Flora 7th, 1410	Bastion, 428		
Hudson, 556	Number One, 1184	Imp. Dick Taylor, 486		
Barefoot, 732	Laura 4th, 1827	Shelby, 1053	First	8 00
Butler, 454	Rosa, 2029	Grant 2d, 534		
"	Emma	"		
Guelph Chief, 888	Jenny Lind, 1778	Sampson 6th, 1058		
"	Fancy, 1637	"		
Honor, 805	Peorlette, 282	Duke of Beaufort, 400		
Iroquois, 564	Georgiana, 991	Imp. Comet, 22		
Prince of Wales, 651½	Flora 4th 122	Imp. May Boy, 974	First	20 00
Bounty, 15	Pink, 1197	Bounty, 15	Second	10 00
Grant 2d. 534	Nina, 1172	Stout, 689		
Shelby, 1063	Laura 3d, 1826	Arrowhead, 409		
Sampson 6th, 1058	Beauty, 1632	Jackson, 926		
Bounty, 15	Lilly, 1099	Bounty, 15		
Queen Ann's Huron, 320	Nemo Philla, 1170	Imp. Omar Pasha, 1011	Second	$10 00
Jack	Number One, 1184	Imp. Dick Taylor, 486	First	15 00
Wah-bah nis, 699	Nellie, 1163			
Grant 2d, 534	Nina, 1172	Stout, 689		
Lovely's Huron 3d, 591	Peorlette, 282	Duke of Beauford, 400	First	10 00
Butler, 454	Rose 3d, 2039	Bounty, 15		
Bobolink, 754	Beauty, 1387	Guelph Chief, 888	Second	5 00
Imp. Robin, 1046	Belle Helena 4th, 811	Barnemo, 424		
Breastplate, 762	Nemo Philla, 1170	Imp. Omar Pasha, 1011	First	10 00
Butler, 454	Kitty Clover, 1070	Bounty, 15		
Grant, 886	Minnie	Frank Quorty, 39		
Guelph Chief, 888	Fancy, 1637	Sampson 6th, 1058	Second	5 00
Hudson, 556	Philoseana, 658	Marylander, 278		
Breastplate, 762	Bracelet, 1449	Queen Ann's Huron, 320	Second	4 00
Barrister, 734	Belle Patterson 6th, 1422	Jack, 565		
Butler, 454	Kitty Clover, 1070	Bounty, 15	First	8 00

JERSEYS.

Prize Duke, 942	Jersey Duchess, 1266	On Isle of Jersey		
Charleston, Imp	Lottie, Imp		Second	$10 00
Kentuck, 628	Lydia, 1772	Terror, 624	First	20 00
Butter Stamp, 700	Lady Fallestine, 2769	Jersey Prince, 1062		
Nankeen Boy, 761	Lucia, 1838	Joshua, 730	First	15 00

CATALE.—Pedigrees, Entries, and Awards—Continued.

JERSEYS—Continued

Owner.	Post-office.	Name and number of animal.
		Bulls 1 year and under 2.
S. M. Poyntz	Maysville, Ky	Julian, 1479
same	"	Robbi, 2496
		Bull Calves.
D. J. Whitmore	Casstown	John L
same	"	Buster
S. M. Poyntz	Maysville, Ky	
		Cows 3 years and over.
Hoover & Co	Bradford	Butter Prize, 6061
Frank Ford	Ravenna	Lady Fallestine, 2769
same	"	Ford's Nellie, 3359
D. J. Whitmore	Casstown	Cowslip's Lassie, 4839
S. M. Poyntz	Maysville, Ky	Madam Kyle 2d, 7145
same	"	Cherry of St. Lambert, 5127
same	"	Minta, 3970
same	"	Lucille, 1828
same	"	Lillian, 1834
same	"	Lunette, 1840
same	"	Larissa, 1844
		Cows 2 years and under 3.
Hoover & Co	Bradford	Silver Leaf, 5017
same	"	Miami Beauty
		Heifers 1 year and under 2.
Hoover & Co	Bradford	Miami Duchess
same	"	Miami Prize
Frank Ford	Ravenna	Zoe
S. M. Poyntz	Maysville, Ky	Caralinda
		Heifer Calves.
Hoover & Co	Bradford	Miami Princess
same	"	Goldie C
Frank Ford	Ravenna	Ilo
S. M. Poyntz	Maysville, Ky	
same	"	Lizzie 2d

AYRSHIRES.

		Bull 3 years and over.
A. J. Wilson	Grafton	Lorain, 681
		Bull 1 year and under 2.
A. J. Wilson	Grafton	James Wilson, 1908
		Bull Calves.
A. J. Wilson	Grafton	Lorain 2d, 1955
same	"	American Hero
		Cows 3 years and over.
A. J. Wilson	Grafton	Nonsuch, 3018
same	"	Susan 3d
same	"	Annie, 3324
same	"	Kitty Meeir 2d
same	"	Snowdrop, 3778
same	"	Lady Bell, 3946
		Heifer 1 year and under 2.
A. J. Wilson	Grafton	Red Rose of Canada
		Heifer Calf.
A. J. Wilson	Grafton	Rosa Lorain

CATTLE.—Pedigrees, Entries, and Awards—Continued.

JERSEYS—Continued.

Name and number of sire.	Name and number of dam.	Name and number of dam's sire.	Premium.	Amount.
Kentuck, 628	Lucy, 1830	Joshua, 730		
Patchen, 1220	Creamery, 3358		Second	$10 00
Charlie	Lilly of Ohio	Charlie		
Charlie Kitteridge, 1247	Cowslip's Lassie, 4839	Charlie Kitteridge	First	5 00
Lowell, 1750	Bella Howe 2d, 5722			
Gold Prince, 2181	Violet, 272	Sir Charles, Imp., 131		
Jersey Prince, 1062	Fallestine 2d	General Scott, 46		
Don Ledro, 1305	Lady Fallestine, 2762	Jersey Prince, 1062		
Charlie Kitteridge, 1247	Cowslips of Ohio, Imp., 2593	On Isle of Jersey	First	20 00
Nero, 3163	Madam Kyle, 7131	Terror, 624		
Lord Lisgor, 1066	Lilly, 12,120	Laral, 506		
Planet, 1130	Eunice of Stalsburg, 3284			
2d Jack of the Isles, 627	Madam Kyle 2d, 1740	Nero, 727	Second	10 00
Kentuck, 628	Lilly, 1775	"		
Black Tom, 731	Queen, 1389	Jack of the Isles, 626		
Kentuck, 628	Lucy, 1770	Nero, 727		
Gold Prince, 2181	Buster Prize, 6061	Gold Prince, 2181	First	10 00
Gold Prince, 2181	Violet, 272	Sir Charles, Imp., 131		
" "	Acacia, 1162			
Butter Stamp, 700	Lucrecia	Earnest, 1303	First	10 00
Beacon Comet 8th, 1280	Caroline, 3298	Touchstone, 315		
Black Prince, 1971	Butter Prize, 6061	Gold Prince, 2181	First	5 00
Gold Prince, 2181	Acacia, 1162			
Butter Stamp, 700	Lady Fallestine, 2769	Jersey Prince, 1062		
Lowell, 1750	Minta, 3970	Planet, 1130		
Kentuck 2d, 758	Lizzie, 1841	Kentuck, 628		

AYRSHIRES.

Nuton, 751	Lilly 2d, 559	Howard, 204	First	20 00
Fitzjames, 1909	Annie Laurie, 4089	Imp. Wilson	First	10 00
Lorain, 681	Kitty Mino 2d, 3821	Prince Arthur, 1686		
" "	Imp. Annie, 3324		First	5 00
Imp. Avondale Farmer, 422	Imp. Avondale, 329			
Jack, 643	Susan, 782	Imp. Comet		
	Imp. Katie		First	20 00
Prince Arthur, 1686	Imp. Kitty Meeir, 3820			
Seafield 2d, 1709	" " "		Second	10 00
Imp. Pride of the Hills, 1379	Imp. Bessie Belle, 926			
Seafield 2d, 1709	Jennie Laurie, 4085	Avondale Farmer, 422	First	10 00
Lorain, 681	Rosie 2d, 3767	Pride of the Hills, 1379	First	5 00

CATTLE.—Pedigrees, Entries, and Awards—Continued.

AWARDS ON SWEEPSTAKES.

Owner.	Post-office.	Name and number of animal	Premium.	Amount.
		Breeders' Herd—Herd of 1 bull and 4 cows or heifers.		
James R. Anderson	Anderson Station	Springdale Airdrie 2d	First	$150 00
		Cow with calf at foot.		
James R. Anderson	Anderson Station	May Flower	First	50 00
		Exhibiters' Herd—Herd of 1 bull and 4 cows or heifers.		
J. Baugh & Sons	Farmers' Institute, Indiana	Breast-Plate 2d	First	100 00
		Bull of any age or class.		
J. Baugh & Sons	Farmers' Institute, Indiana	Breast-Plate 2d	First	60 00
		Cow of any age or class.		
John Montgomery	Granville	10th Louan of Granville	First	50 00
		Devons—Herd of 1 bull and 4 cows or heifers.		
Buckingham & Howard	Zanesville	Barnemo 2d	First	40 00
		Cow with calf at foot.		
D. J. Whitmore	Casstown	Kitty Clover	First	20 00
		Ayrshires—Herd of 1 bull and 4 four cows or heifers.		
A. J. Wilson	Laporte	Lorain	First	40 00
		Cow with calf at foot.		
A. J. Wilson	Laporte	Annie	First	20 00
		Jerseys—Herd of 1 bull and 4 cows or heifers.		
S. M. Poynts	Maysville, Kentucky	Kentuck 2d	First	40 00
		Cow with calf at foot.		
D. J. Whitmore	Casstown	Cow Slips Lassie	First	20 00

For pedigrees of sweepstakes animals see preceding classes.

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium	Amount.
WORK OXEN, STEERS, AND FAT CATTLE.			
Steer 4 years and over.			
Frank Postle, Camp Chase	Monarch	1st	$30
Steer 2 years and under 3.			
Frank Postle, Camp Chase	Weighty	1st	15
SHEEP—MERINOS.			
Rams 2 years and over.			
W. H. Yeazel, Jr., Springfield			
" "			
W. A. Herriott, Oakdale Station, Pa	Rockwood		
E. J. Hiatt & Bros., Chester Hill	Keystone		
" "	Mountain Torrent	1st	30
Copper & McFarland, Mt. Vernon	Doctor	3d	15
Archer & Miller, Hickory, Pa	Leon		
Jas. Glass, Burgettstown, Pa			
A. M. & L. C. Tyler, Alexandria			
" "	Victor Wright		
J. M. Wright, Johnstown			
" "			
S. F. Weller, New Lexington	Keystone		
" "	Success		
R. K. Willis, Lewis Center			
" "			
W. J. Emmons, Kenton			
D. M. Bailey & Bros., Burgettstown, Pa			
" "			
" "			
J. G. Blue, Cardington			
J. H. Cherbino, Middleborough, Vt	Centennial		
S. F. Porter, Cadiz			
Albert Quigley, Cadiz			
Alex. McCalmont, Hickory, Pa		2d	20
" "			
Rams under 2 years.			
W. M. Yeazel, Springfield		3d	15
" "			
" "			
W. A. Herriott, Oakdale Station, Pa		2d	20
" "			
E. J. Hiatt & Bro., Chester Hill	Silver Fleece		
" "	Chester Boy		
Copper & McFarland, Mt. Vernon	Midnight		
" "	Rattler		
Jas. Glass, Burgettstown, Pa	Hammond	1st	30
" "			
A. M. & L. C. Tyler, Alexandria	Major		
" "			
J. N. Wright, Johnstown			
" "			
H. P. Sellers, New Lexington	Little Nubby		

ENTRIES, AWARDS, ETC —Continued.

Owner's name and post-office.	Name of animal.	Premium	Amount.
D. M. Bailey & Bros., Burgettstown, Pa			
" "			
" "			
" "			
" "			
J. G. Blue, Cardington			
" "			
W. H. Yeazel, Jr., Springfield			
J. D. Cherbino, Middleborough, Vt			
S. S. & S. Campbell, Cadiz	Longfellow		
" "			
Albert Quigley, Cadiz			
Alex. McCalmont, Hickory, Pa			
Ram Lambs.			
W. H. Yeazel, Jr., Springfield			
" "			
W. L. Archer, Burgettstown, Pa		2d	$10
" "			
E. J. Hiatt & Bro., Chester Hill	Atlanta		
" "	Goshen		
" "	Planet		
Copper & McFarland, Mt. Vernon			
" "		3d	5
J. M. Miller, Hickory, Pa			
" "			
A. M. & L. C. Tyler, Alexandria			
J. N. Wright, Johnstown			
" "			
H. P. Sellers, New Lexington	Bloody Butcher		
" "	Lost Boy		
S. F. Weller, New Lexington	Long Wool		
J. G. Blue, Cardington			
" "			
" "			
J. D. Cherbino, Middleborough, Vt			
S. S. & S. Campbell, Cadiz	Ben. Franklin	1st	15
Albert Quigley, Cadiz			
Geo. Curry, Croton			
Alex. McCalmont, Hickory, Pa			
" "			
Pen of 3 ewes over 2 years.			
W. H. Yeazel, Jr., Springfield			
W. L. Archer, Burgettstown, Pa.		1st	30
W. A. Herriott, Oakdale Station, Pa.			
E. J. Hiatt & Bro., Chester Hill			
J. M. Miller, Hickory, Pa.		3d	15
Jas. Glass, Burgettstown, Pa.			
A. M. & L. C. Tyler, Alexandria			
" "			
J. N. Wright, Johnstown			
" "			
W. J. Emmons, Kenton			
S. T. Weller, New Lexington			
J. D. Cherbino, Middleborough, Vt.			

ENTRIES, AWARDS ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
S. Campbell, St. Clairsville			
" "		2d	$20
Albert Quighby, Cadiz			
Pen of 3 ewes under 2 years.			
W. H. Yeazel, Jr., Springfield			
W. A. Herriott, Oakdale Station, Pa.			
E J. Hiatt & Bro., Chester Hill			
Copper & McFarland, Mt. Vernon			
" "			
J. M. Miller, Hickory, Pa.		2d	15
Jas. Glass, Burgettstown, Pa.		1st	25
J. N. Wright, Johnstown			
" "			
W. J. Emmons, Kenton			
H. P. Sellers, New Lexington			
" "			
S. F. Weller, "			
J. D. Cherbino, Middleborough, Vt.			
S. S. Campbell, Cadiz		3d	10
Pen of 3 ewe lambs.			
W. H. Yeazel, Jr., Springfield			
W. L. Archer, Burgettstown, Pa.		1st	20
E. J. Hiatt & Bro., Chester Hill			
Copper & McFarland, Mt. Vernon			
" "			
J. M. Miller, Hickory, Pa.			
W. J. Emmons, Kenton			
H. P. Sellers, New Lexington			
S. F. Weller, "			
J. G. Blue, Cardington		3d	10
J. D. Cherbino, Middleborough, Vt.			
S. S. Campbell, Cadiz		2d	15
Geo. Carry, Croton			
Alex. McCalmont, Hickory, Pa.			
LONG WOOLS. TO INCLUDE LEICESTERS, LINCOLNS, AND COTSWOLDS.			
Rams 2 years and over.			
J. B. Dort, New California			
J. J. Dodge & Son, South New Lyme		1st	20
" "			
" "			
Henry E. Clark, Pittsfield			
Geo. Garford, Elyria		2d	10
" "			
Ram under 2 years.			
J. J. Dodge & Son, South New Lyme		1st	15
Henry E. Clark, Pittsfield		2d	8
Geo. Garford, Elyria			
" "			

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Ram lamb.			
J. B. Dort, New California			
“ “			
J. J. Dodge & Son, South New Lyme			
“ “			
“ “			
Henry E. Clark, Pittsfield		2d	$5
J. J. Dodge & Son, South New Lyme			
“ “			
“ “		1st	10
Geo. Garford, Elyria			
“ “			
Pen of three ewes over 2 years.			
J. J. Dodge & Son, South New Lyme		2d	8
J B. Dort, New California			
Geo. Garford, Elyria		1st	15
“ “			
Pen of three ewes under 2 years.			
J. J. Dodge & Son, South New Lyme		1st	15
“ “			
Henry E. Clark, Pittsfield			
“ “			
Geo. Garford, Elyria		2d	8
“ “			
Pen of three ewe lambs.			
J. J. Dodge & Sons, South New Lyme		1st	10
“ “			
Henry E. Clark, Pittsfield			
Geo. Garford, Elyria		2d	5
“ “			
MIDDLE WOOLS, TO INCLUDE SOUTHDOWNS, OXFORDDOWNS, AND SHROPSHIREDOWNS.			
Ram under 2 years.			
J. H. Gower, Springfield		1st	$5
G. J. Hagerty & Son, Hanover		2d	8
Ram lamb.			
J. H. Gower, Springfield			
“ “			
G. J. Hagerty & Son, Hanover		1st	10
“ “		2d	5
“ “			
“ “			
Pen of three ewes over 2 years.			
G. J. Hagerty & Son, Hanover		1st	15
“ “		2d	8

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Pen of three ewes under 2 years.			
J. H. Gower, Springfield		2d	$8
G. J. Hagerty & Son, Hanover		1st	15
Pen of three ewe lambs.			
J. H. Gower, Springfield		2d	5
G. J. Hagerty & Son, Hanover		1st	10
" "			
FAT SHEEP.			
Pen of 3 fat sheep.			
David Postle, Camp Chase		1st	15
J. J. Dodge & Sons, South New Lyme		2d	8
J. H. Gower, Springfield			
Single fat sheep.			
David Postle, Camp Chase		1st	5
J. J. Dodge & Sons, South New Lyme			
SWEEPSTAKES ON FINE-WOOL SHEEP.			
Ram of any age, with 5 of his get.			
Copper & McFarland, Mt. Vernon		2d	15
J. M. Miller, Hickory, Pa.			
S. T. Porter, Cadiz		1st	25
Ewe of any age, with 3 of her lambs.			
E. J. Hiatt & Bros., Chester Hill		2d	10
J. M. Wright, Johnstown			
S. S. Campbell, Cadiz			
" "		1st	15
Flock of one ram, three ewes over 2 years old, three ewes over 1 and under 2 years, three ewe lambs, bred and owned by the exhibiter.			
E. J. Hiatt & Bros., Chester Hill		2d	15
J. M. Miller, Hickory, Pa.			
J. N. Wright, Johnstown			
S. S. Campbell, Cadiz		1st	25
SWEEPSTAKES ON LONG-WOOL SHEEP.			
Ram of any age, with 5 of his get.			
Henry E. Clark, Pittsfield		1st	15
Geo. Garford, Elyria		2d	10
Ewe, with 2 of her lambs.			
J. J. Dodge & Sons, South New Lyme			
Geo. Garford, Elyria		1st	10

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Flock of one ram and five ewes.			
J. J. Dodge & Sons, South New Lyme			
Henry E. Clark, Pittsfield			
Geo. Garford, Elyria		1st	$20
SWINE—BERKSHIRES.			
Boar 2 years and over.			
H. A. Shank, Alpha			
Byers & Gries, Tiffin			
Wm. Fulk, Ashland	Sambo Giant	1st	25
A. Ware, Washington C. H.		2d	15
Boar 1 year and under 2.			
Wm. Wright, Lockbourne			
Byers & Gries, Tiffin			
A. Ware, Washington C. H.		2d	10
D. W. Todd, Urbana			
D. A. Peterson, Spring Valley			
Jno. H. Roe & Bro., Newark	Reugh	1st	20
D. A. Peterson, Spring Valley			
Boar under 1 year.			
H. A. Shank, Alpha			
R. Swisher, Woodstock			
D. W. Todd, Urbana			
" "			
B. Funk, Rowsburg	Perfection		
" "	Champion		
A. Ware, Washington C. H.		1st	15
" "		2d	10
" "			
W. L. Mallow, New Holland			
D. A. Peterson, Spring Valley			
" "			
" "			
" "			
Sow 2 years and over.			
R. Swisher, Woodstock			
" "			
D. W. Todd, Urbana		2d	12
" "			
A. Ware, Washington C. H		1st	20
W. L. Mallow, New Holland			
" "			
D. A. Peterson, Spring Valley			
Sow 1 year and under 2.			
R. Swisher, Woodstock			
B. Funk, Rowsburg			
A. Ware, Washington C. H			
W. L. Mallow, New Holland		1st	15

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and postoffice.	Name of animal.	Premium.	Amount.
Sow 1 year and under 2—Continued.			
D. W. Todd, Urbana			
D. A. Peterson, Spring Valley			
“ “		2d	$10
“ “			
“ “			
Sow under 1 year.			
R. Swisher, Woodstock			
D. W. Todd, Urbana			
“ “		1st	10
Byers & Gries, Tiffin			
B. Funk, Rowsburg	Star of the West		
A. Ware, Washington C. H			
“ “			
“ “			
W. L. Mallow, New Holland			
“ “		2d	5
“ “			
D. A. Peterson, Spring Valley			
“ “			
“ “			
“ “			
Sow with litter of not less than six pigs under 6 months.			
R. Swisher, Woodstock			
D. W. Todd, Urbana			
A. Ware, Washington C. H		1st	25
M. L. Mallow, New Holland			
D. A. Peterson, Spring Valley		2d	15
“ “			
“ “			
POLAND CHINAS.			
Boar 2 years and over.			
E. & J. M. Klever, Bloomingsburg		2d	15
J. C. Chamberlain, Troy			
Robinson & Kinder, Piqua			
Stover & Stalter, Wagram			
J. Douthlett, Xenia		1st	25
A. Johnson, Clifton			
Boar 1 year and under 2.			
E. & J. M. Klever, Bloomingsburg	Longfellow, 2d	1st	20
“ “	Minus		
Robinson & Kinder, Piqua		2d	10
A. Johnson, Clifton			
“ “			
Boar under 1 year.			
E. & J. M. Kliver, Bloomingsburg		1st	15
“ “			
“ “			

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and postoffice.	Name of animal.	Premium.	Amount.
Boar under 1 *year*—Continued.			
Robinson & Kinder, Piqua			
G. W. Halter, Wagram			
A. Johnson, Clifton			
“ “			
David Taylor, Jr., Columbus			
“ “			
J. Donthett, Xenia		2d	$10
Sow 2 *years aud over.*			
E. & J. M. Klever, Bloomingsburg	Nelly Bly 2d	1st	20
“ “	Queen of Fayette		
“ “	Spotted Beauty		
J. C. Chamberlain, Troy		2d	12
Robinson & Kinder, Piqua			
Stewart Gilmore, Columbus			
A. Johnson, Clifton			
“ “			
Sow 1 *year and under* 2.			
E. & J. M. Klever, Bloomingsburg		2d	10
J. C. Chamberlain, Troy			
Robinson & Kinder, Piqua		1st	15
Stewart Gilmore, Columbus			
A. Johnson, Clifton			
“ “			
Sow under 1 *year.*			
E. & J. M. Klever, Bloomingsburg		1st	10
“ “			
“ “			
S. A. Parrott, Washington C. H.			
G. W. Stalter, Wagram		2d	5
“ “			
J. Donthett, Xenia			
A. Johnson, Clifton			
“ “			
Sow, with litter of six pigs under 6 *months old.*			
E. & J. M. Klever, Bloomingsburg	Goldfinch 2d		
“ “	Forest Beauty	1st	25
Robinson & Kinder, Piqua		2d	15
S. A. Parrott, Washington C. H.			
Stewart Gilmore, Columbus			
A. Johnson, Clifton			
“ “			
CHESTER WHITE BREEDS.			
Boar 2 *years and over.*			
Geo. W. Bittinger, Plymouth		2d	15
“ “			
S. H. Todd, Wakeman		1st	25
E. R. Moody, Eminence, Ky.			

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Boar 1 year and under 2.			
C. M. Stephenson, Eldersville, Pa.			
S. H. Todd, Wakeman		2d	$10
" "		1st	20
G. W. Bittinger, Plymouth			
" "			
Sow 2 years and over.			
C. M. Stephenson. Eldersville, Pa.			
" "			
Geo. W. Bittinger, Plymouth			
" "			
S. H. Todd, Wakeman		2d	12
" "			
E. R. Moody, Eminence, Ky.		1st	20
Sow 1 year and under 2.			
C. M. Stephenson, Eldersville, Pa.			
G. W. Bittinger, Plymouth		2d	10
" "			
" "			
" "			
S. H. Todd, Wakeman		1st	15
" "			
" "			
E. R. Moody, Eminence, Ky.			
" "			
Sow, with litter of six pigs under 6 months old.			
C. M. Stephenson, Eldersville, Pa.			
" "			
G. W. Bittinger, Plymouth			
" "			
S. H. Todd, Wakeman		1st	30
" "			
E. R. Moody, Eminence, Ky.			
" "		2d	15
Boar under 1 year.			
G. W. Bittinger, Plymouth			
" "			
" "		2d	10
S. H. Todd, Wakeman			
" "			
E. R. Moody, Eminence, Ky.			
" "		1st	15
C. M. Stephenson, Eldersville, Pa.			
" "			
" "			
" "			
Sow under 1 year.			
G. W. Bittinger, Plymouth			
" "			

ENTRIES, AWARDS, ETC.—Continued.

Owner's name and post-office.	Name of animal.	Premium	Amount.
G. W. Bittinger, Plymouth			
" "			
S. H. Todd, Wakeman			
" "			
" "			
E. R. Moody, Eminence, Ky.		1st	$10
" "			
E. M. Stephenson, Eldersville, Pa.		2d	5
" "			
" "			
" "			

SWINE SWEEPSTAKES.

Boar of any age or breed.

Owner's name and post-office.	Name of animal.	Premium	Amount.
Wm. Fulk, Ashland			
E. & J. M. Klever, Bloomingsburg	Governor Hayes		
" "	Longfellow 2d		
J. C. Chamberlain, Troy		1st	30
Robinson & Kinder, Piqua			
G. W. Bittinger, Plymouth			

Sow of any age or breed.

Owner's name and post-office.	Name of animal.	Premium	Amount.
E. & J. M. Klever, Bloomingsburg		1st	20
C. M. Stephenson, Eldersville, Pa.			
Robinson & Kinder, Piqua			
W. L. Mallow, New Holland			
A. Johnson, Clifton			
Geo. W. Bittinger, Plymouth			

Fat hog.

Owner's name and post-office.	Name of animal.	Premium	Amount.
W. L. Mallow, New Holland			
D. H. Peterson, Spring Valley			
S. H. Todd, Wakeman		1st	15
Geo. W. Bittinger, Plymouth			

Herd of Poland Chinas.

Owner's name and post-office.	Name of animal.	Premium	Amount.
E. & J. M. Kleever, Bloomingsburg		1st	Dip.
A. Johnson, Clifton			

Herd of Chester Whites.

Owner's name and post-office.	Name of animal.	Premium	Amount.
C. M. Stephenson, Eldersville, Pa.			
" "			
Geo. W. Bittinger, Plymouth			
" "			
S. H. Todd, Wakeman		1st	Dip.

Herd of Berkshires.

Owner's name and post-office.	Name of animal.	Premium	Amount.
R. Swisher, Woodstock			
D. W. Todd, Urbana			
A. Ware, Washington C. H.		1st	Dip.
W. L. Mallow, New Holland			
D. H. Peterson, Spring Valley			
" "			

Poultry.

W. B. Shyrigh, Urbana, best pair white Cochin fowls	$3
" " second best pair white Cochin fowls	2
J. W. Cullumber, Lancaster, best pair black Cochin fowls	3
Yeazel & Bishop, Springfield, second best pair black Cochin fowls	2
W. B. Shyrigh, Urbana, best pair Partridge Cochin fowls	3
" " second best pair Partridge Cochin fowls	2
M. Broadwell, Urbana, best pair buff Cochin fowls	3
" " second best pair buff Cochin fowls	2
Yeazel & Bishop, Springfield, best pair light Brahma fowls	3
Thos. Durflinger, Lillie Chapel, second best pair light Brahma fowls	2
J. A. Cull, Urbana, best pair dark Brahma fowls	3
J. W. Opfer, Elyria, best brown-breasted red game	3
Harry Stallman, Columbus, second best brown-breasted red game	2
J. W. Opfer, Elyria, best pair black-breasted red game	3
T. W. Algeo, Columbus, second best pair black-breasted red game	2
J. W. Opfer, Elyria, best trio duck-wing game	3
S. E. Wurst, Elyria, second-best trio duck-wing game	2
George Decker, Elyria, best trio pile game	3
T. W. Algeo, Columbus, second best trio pile game	2
Harry Stallman, Columbus, best trio Hanny game	3
Fred. Butler, Columbus, second best trio Hanny game	2
T. W. Algeo, Columbus, best pair of any other variety game fowls	3
" " second best pair of any other variety game fowls	2
J. W. Opfer, Elyria, best pair white-crested black Polands	3
Yeazel & Bishop, Springfield, second best pair white-crested black Polands	2
" " best pair silver Polands	3
" " best pair white Polands	3
J. W. Opfer, Elyria, best pair golden Polands	3
Yeazel & Bishop, Springfield, second best pair golden Polands	2
" " best pair black Spanish	3
J. W. Cullumber, Lancaster, second best pair black Spanish	2
S. E. Wurst, Elyria, best pair white Leghorns	3
Hoover & Co., Bradford, second best pair white Leghorns	2
S. E. Wurst, Elyria, best pair brown Leghorns	3
Hoover & Co., Bradford, second best pair brown Leghorns	2
M. A. Howe, Elyria, best pair silver-spangled Hamburgs	3
Yeazel & Bishop, Springfield, second best pair silver-spangled Hamburgs	2
Hoover & Co., Bradford, best trio Plymouth Rocks	3
M. A. Howe, Elyria, second best trio Plymouth Rocks	2
S. E. Wurst, Elyria, best trio game bantams	2
Hoover & Co., Bradford, second best trio game bantams	1
J. W. Opfer, Elyria, best trio any other variety	2
Jacob H. Cole, Harlem, second best trio any other variety	1
J. T. Phinney & Bro., Orange Station, best pair Houdans	3
Jacob H. Cole, Harlem, second best pair Houdans	2
Yeazel & Bishop, Springfield, best pair Crevecœur	3
" " second best pair Crevecœur	2
G. W. Baker, Elyria, best 6 capons	5

S. E. Wurst, Elyria, best pair peafowls	3
Jacob H. Cole, Harlem, best pair Guinea fowls	3
S. E. Wurst, Elyria, best pair Aylesbury ducks	3
Yeazel & Bishop, Springfield, second best pair Aylesbury ducks	2
Henry E. Clark, Pittsfield, best pair Rouen ducks	3
Yeazel & Bishop, Springfield, second best pair Rouen ducks	2
S. E. Wurst, Elyria, best pair Topknot ducks	3
Jacob H. Cole, Harlem, second best pair Topknot ducks	2
S. E. Wurst, Elyria, best pair Muscovy ducks	3
" " second best pair Muscovy ducks	2
Hoover & Co., Bradford, best pair any other variety of ducks	2
Jacob H, Cole, Harlem, second best any other variety of ducks	3
Hoover & Co., Bradford, best pair common turkeys	3
Jacob H. Cole, Harlem, second best pair common turkeys	2
M. A. Howe, Elyria, best pair bronze turkeys	4
A. Johnson, Clifton, second best pair bronze turkeys	3
Henry E. Clak, Pittsfield, best pair African geese	3
Jacob H. Cole, Harlem, second best pair African geese	2
Hoover & Co., Bradford, best white Embden geese	3
Jacob H. Cole, Harlem, second best white Embden geese	2
Yeazel & Bishop, Springfield, best pair white China geese	3
Hoover & Co., Bradford, second best pair white China geese	2
Yeazel & Bishop, Springfield, best pair Toulouse geese	3
Hoover & Co., Bradford, second best pair Toulouse geese	2
W. H. Yeazel, Jr., Springfield, largest exhibition of pigeons, not less than six varieties	5

SECOND DEPARTMENT.

Machinery, Engines, etc.

Columbus Machine Co., Columbus, best stationary engine	$25
Columbus Machine Co., Columbus, second best stationary engine	15
Sheidler & McNamar, Newark, best portable steam engine	$20 and diploma.
Minor Curtis, Milan, second best portable steam engine	$15
Columbus Machine Co., Columbus, best steam pump	5
Chandler & Taylor, Indianapolis, Ind., best portable saw-mill	$40 and diploma.
Jas. Ohlen, Columbus, best saw gummer	$3
Baylies, Vaughan & Co., Richmond, Ind., best self setting saw-mill head-block	5

Your committee to whom was submitted the task of examining and awarding premiums in Second Department, entry-book No. 40, herewith submit the following, in addition to the awards as marked on said book:

1st. The engine exhibited by the Columbus Machine Co., of Columbus, in operation, driving the machinery in Power Hall, is highly creditable both to the manufacturers and the association, as a machine of excellent construction and proportions, doing a great amount of work, running smooth, and with the greatest ease and regularity under varying loads, with comparative low pressure of steam. The outward finish is excellent, and reflects credit upon the manufacturers, as well as making it an ornament to your Fair. The other exhibits of this firm are also first class.

2d. In the matter of portable steam engines, the exhibit is large and very fine, each possessing merits and peculiar advantages, which renders a decision an undesirable task to your committee. The result is seen by reference to the entry-book.

3d. The traction farm engine, made and exhibited by Messrs. Davidson & Rutledge, of Ada, Ohio, is entered as a "portable steam engine." We are of the opinion that this should come in a special class, as it is a combined road or traction engine and a portable engine, moving over the ground independent of any other than its own power, and being guided in any direction at the will of the operator, and was successfully operated in our presence to our satisfaction, turning in a very small space, running forwards or backwards, and showing ability to make good speed on a straight road. While we can not award this a premium as a portable steam engine, as we understand the term, we unanimously commend it to your special favor as a complete traction or road engine, as well as a portable steam engine for general purposes.

In conclusion, we will say the exhibit in this class is good, and well worthy so large and important an exhibition as our State Fair.

Awarding Committee—A. T. Barnes, H. M. Barnhart, Wm. Powell.

Shop Machinery.

J. B. Wenger, East Union, forge blower	$5
M. & D. Krumm, Columbus, ornamental fence	5
R. J. Tussing, Winchester, best portable fence	3
M. & D. Krumm, Columbus, best iron fence, including posts	5
Thos. B. Wiley, Lancaster, farm gate	3
Philip Kinnel, Columbus, sausage meat cutter and stuffer	3

We, the committee, have examined all the articles in Book 41, and awarded to the best of our knowledge and ability.

Awarding Committee.—C. C. Park, C. Smiley Smith, David Miller.

Hay and Harvesting Machines and Tools.

James Ohlen, Columbus, cornstalk cutter	$3
John N. Thomas & Sons, Springfield, best horse hay rake (wheel)	5
John N. Thomas & Sons, Springfield, best horse hay rake (revolving)	5
C. Fockler & Brother, Dubuque, Iowa, best grapple and pulleys	3
" " best horse hay fork	3
" " best horse hay fork and stacker combined	5
J. H. Tompkins, Tiffin, best hay loader	5
D. M. Osborne & Co., Cleveland, best grain-binder	8
J. A. Schwob, Miltonsburg, best grain-cradle	3
John H. Thomas & Sons, Springfield, best display of haying and harvesting tools	Diploma.
David Lawton, Racine, Wisconsin, best power hay and straw cutter	5
" " best hand hay and straw cutter	Diploma.
Walter A. Wood, Hoosiack Falls, New York, worthy improvement in reaping machine, mowing machine, or combined machine, made since the last State Fair	Diploma.

Awarding Committee.—C. H. McCormick, D. W. Godman, E. B. Monnette.

Agricultural Machines—First Division.

J. I. Case, Racine, Wis., best threshing machine, operated on the ground	Silver medal.
Jacobs Bros., Columbus, best clover-huller and cleaner	Silver medal.
P. P. Mast & Co., Springfield, best cider-mill and press	$5
P. K. Dederick & Co., Albany, New York, best hay-press	5
P. Smith Bro. & Co., Sidney, best corn-sheller (power)	5
Keystone Manufacturing Co., Sterling, Illinois, best corn-sheller (hand)	3
Rinehart, Ballard & Co., Springfield, best grain register	3
L. J. Miller, Cincinnati, best farm feed-mill	5
D. L. Pope & Son, Welshfield, best stock scales for general purposes, set up by the exhibiter and used by the board during the fair free of charge	20
J. S. Farmer, Mansfield, best agricultural boiler or steamer	Silver medal.
P. C. Harris, Lithopolis, best well pump	3
Mast, Foos & Co., Springfield, best self-regulating windmill	10

Awarding Committee.—Isaac N. Carnes, Jacob Hurr, John Kernz.

Ohio State Board of Agriculture:

Your committee beg leave to report that, after a careful examination of the "Fearless Railway Horse power and Cleaner," manufactured by Minard Harder, Cobleskill, New York, commend it as a very superior machine, as to lightness of draft, quality of work, and saving of grain, all of which we respectfully submit.

Special Committee.—Howard Trimble, Robt. N. Taylor, Thos. Hazard, Geo. Neilson.

Agricultural Machines—Second Division.

J. I. Case, Racine, Wisconsin, best horse-power (sweep)	$10
Minard Harder, Cobleskill, New York, best horse-power (chain)	5
James Mossman, Westerville, best stump extractor	Silver medal.
J. W. Penfield, Willoughby, best brick machine	$10 or silver medal.
" " best drain-tile machine, with specimen	$8 or silver medal.
Jacob Creamer, Mechanicsburg, best mole or blind ditching machine	$10
A. E. Johnson, Samantha, best tile-ditching machine	Silver medal.
Hocking Valley Manufacturing Company, Lancaster, best post-hole borer or digger	$2
J. M. Case, Columbus, best water-wheel	3

We, the undersigned committee, after a careful examination of the various articles in our book, find all to be meritorious, and regret that our duty compelled us to make a distinction; we have, however, faithfully tried to do what to us seemed right. In brick and tile machines we found six entries, all the different machines showing some points of excellence; and we would especially call the attention of the Board to the Tiffany brick and tile machine, exhibited by George S. Tiffany, which presents many points of excellence; and would also to the machine exhibited by the Adrian Brick and Tile Machine Manufacturing Company, of Michigan; also to the Tiffany exhibited by H. Brewer & Co. To any one having steam power, either of these machines, in the opinion of your committee, will give good satisfaction. The machine exhibited by Chandler & Taylor being located out of doors, the rain had so softened their clay that they could not do as good work as they probably could under more favorable circumstances.

Awarding Committee.—Jesse H. Kirk, R. B. Davis, E. Huber, J. L. Gooding.

Drills and Cultivators.

Mechanicsburg Machine Co., Mechanicsburg, best two-horse grain-drill	Silver medal.
Jacobs Bros., Columbus, best one-horse grain-drill	Diploma.

P. P. Mast & Co., Springfield, best grass seed sower, drill attachment	Diploma.
Hocking Valley Manufacturing Co., Lancaster, best hand corn-planter	Diploma.
P. P. Mast & Co., Springfield, best two-horse corn-cultivator	$5
Jno. Snyder, Mt. Sterling, best one-horse corn-cultivator	3
Jacobs Bros., Columbus, best farm road-scraper	3
David Tipton, Delaware, best roller and crusher	5
J. Fred. Munz, Delaware, best harrow	3
P. P. Mast & Co., Springfield, best display of agricultural implements, exhibited by the manufacturer or his agent	20

We, the committee on Entry Book 45, herewith hand you our report. As shown by the entry book, the display of the various implements was full, and in many cases nearly equally meritorious, many of which we would commend to your favorable consideration.

Awarding Committee—W. J. Kirk, Pomeroy; J. S. Faris, Bellefontaine; E. B. McGurry, Urbana; R. N. Twigloe, Sandusky; Geo. Neilson, Delaware.

Plows.

South Bend Iron Works, South Bend, Ind., best plow for general purposes	$8
J. Fred. Munz, Delaware, best stubble plow	8
Borger & Rauch, Urbana, best sod-plow	8
G. Diemer & Co., Columbus, best double plow	8
South Bend Chilled Plow Co., South Bend, Ind., best one-horse plow	3
Brown Manly Plow Co., Malta, best double shovel plow	3
G. Diemer & Co., Columbus, best road plow	3
P. P. Mast & Co., Springfield, best sulky attachment for plow	Diploma.
Long, Allstatter & Co., Hamilton, sulky plow and attachment	$3
Buckeye Plow and Share Co., Columbus, best improvement in plows	Diploma.
South Bend Chilled Plow Co., South Bend, Ind., best display and greatest variety of plows	10

OHIO STATE FAIR GROUNDS, THURSDAY, *September* 12, 1878.

To the Ohio State Board of Agriculture:

Your committee beg leave to report that while all the plows exhibited in the second department showed many points of excellence and great improvement in plows in general, would submit that, in our judgment, the entries marked as "first premiums" combined the most points of excellence. The several displays of plows commend themselves to the admiration of visitors as well as your committee.

Awarding Committee—Howard Linville, Christopher Weist, Robert N. Taylor.

THIRD DEPARTMENT.

Mechanics' and Manufacturers' Products—Worked Metals.

Hoffman & Hayden, Carroll, best display window blind or shutter trimmings	$3
James W. Meek, Columbus, best display hames	3
James W. Meek, Columbus, best display saddle trees	3
P. Hayden & Son, Columbus, best display saddlers' hardware	5
Bidleman & Bro., Columbus, best display horse shoes and horse shoe nails	3
Mt. Vernon Lamp Company, Mt. Vernon, best display lamps	3
Philip, Kinnel, Columbus, best display general hardware	10
D. M. Charters, Columbus, best display clocks	5
Emrich & Pinger, Columbus, best display kitchen utensils of brass or copper	5

James Ohlen, Columbus, best display circular and mill saws	$5
“ “ best display cross cut and hand saws	5
James W. Meek, Columbus, best display brushes	3
“ “ best display shoemakers' tools, lasts, pegs, and lasting machine	5
P. Hayden & Son, Columbus, best display malleable iron by manufacturer	5
“ “ best display wire by manufacturer	5
Edwin A. Lee, agent, Columbus, best display safes	10

Awarding Committee.—Thomas B. Whiley, W. H. Hill, J. B. Bowman.

Stoves, Castings, Marbleizing, etc.

Emrich & Pinger, Columbus, best cooking stove for wood	$5
“ “ best cooking stove for coal	5
“ “ best parlor stove	5
“ “ best display stoves by manufacturer	10
J. J. Vogelsang, Columbus, best furnace for heating dwellings	Silver Medal.
Emrich & Pinger, Columbus, best base burner for hard coal	$5
“ “ best base burner for soft coal	5
E. W. & C. W. Blair, Columbus, best cooking range	5
Emrich & Pinger, Columbus, best portable range	5
Aston & Huff, Columbus, best parlor grate	3
Emrich & Pinger, Columbus, best pair ornamental iron vases	3
Aston & Huff, Columbus, best specimen marbleized stone	5
Emrich & Pinger, Columbus, best display hollow iron ware	3
H. Mithoff & Co., Columbus, best display granite and marbleized ware	5

Awarding Committee.—J. M. Lane, Mrs. J. M. Jones. Mrs. W. L. Hamilton.

Vehicles.

John Immel, Columbus, best and handsomest barouche or coach	$20
E. & H. F. Booth, Columbus, best and handsomest two-horse family carriage	15
“ “ best and handsomest one-horse family carriage	15
Hayes Carriage Co., Columbus, best and handsomest top buggy	15
“ “ best and handsomest open buggy	10
John Immel, Columbus, best and handsomest pony phæton	10
Hayes Carriage Co., Columbus, best and handsomest sulky	5
Wm. Moore, Elmore, best farm wagon	10
Tuller Buggy Co , Columbus, best spring market wagon	10
Hayes Carriage Co., Columbus, best express wagon	10
Jacob Bros., Columbus, best wheelbarrow	3
John Patterson, Columbus, best wagon or carriage brake	3
Wm. Moore, Elmore, best wagon spring seat	2
Neil, Tippett & Kelleau, Junction City, best bent work for carriage	5
“ “ best display carriage wheels, hubs, etc	8
E. & H. F. Booth, Columbus, best display carriages and buggies by manufacturer	Diploma.

Awarding Committee.—Silas N. Field, J. R. Brandt, A. M. Hankins.

Household Implements, Wooden-ware, etc.

John M. Schuster, Columbus, best display cedar ware	$3
“ “ best display pine ware	3
“ “ best display coopers' ware	5
J. M. Hoover & Son Bradford, best display grain-measures	3
Hildreth, Martin & Co., Columbus, best display pine, oak, or walnut doors	5
“ “ best display window blinds	3
W. J. Fitch, Madison, best turning-lathe work	3
L. C. Van Slyke, Columbus, best wall-pocket	3
“ “ best wall-bracket	3
Lewis Swickard, Hope, best home-made axe-handle	1
Charles S. Woodrow, Columbus, best churn	3
H. H. Buck, Columbus, best dozen corn brooms	3
Underwood & Edwards, Edwards' Station, best washing machine	5
Munroe, Miller & Co., Zanesville, best clothes wringer	3
John M. Schuster, Columbus, best clothes horse to occupy least space	3
S. M. Oldham, Reynoldsburg, best bee-hive (without bees)	3

Awarding Committee—S. D. Killian, W. R. Morris, C. Quinn.

Glass, Crockery, Stoneware, etc.—American manufacture.

Wassall Fire Clay Company, Columbus, best terra cotta	$3
“ “ “ best fire-brick	3
Columbus Sewer Pipe Company, best display drain tile	5
Wassall Fire Clay Company, Columbus, best Ohio fire-clay, with samples of ware	5
Wassall Fire Clay Company, Columbus, best display of Ohio clays for pottery, with samples of ware	5

Awarding Committee—John Haley, C. H. Neil, W. T. Burdell.

Minerals and Chemicals.

Jos. Leyndrecker, Lithopolis, best dressed building-stone	$5
W. B. Brooks & Son, Columbus, collection Ohio bituminous coal for household purposes	5
W. B. Brooks & Son, Columbus, collection Ohio bituminous coal for manufacturing purposes	5

Awarding Committee—S. D. Killian, W. R. Morris, C. Quinn.

FOURTH DEPARTMENT.

Textile Fabrics and Domestic Manufactures—Household Fabrics.

Mrs. J. Arnold, Columbus, best rag carpet, 15 or more yards	$5
Miss Sarah Bailey, Columbus, second best rag carpet, 15 or more yards	3
Miss Lou Landauer, Columbus, best hearth-rug	3
Miss Mary Koerner, Columbus, second best hearth-rug	2
Mrs. W. H. Ferguson, Columbus, best yarn rug	3
Miss M. B. Conrad, Columbus, second best yarn rug	2
Mrs. Maggie Graham, Reynoldsburg, best 10 yards domestic flannel	3
Mrs. Mary Maxwell, Reynoldsburg, second best 10 yards domestic flannel	2
Mrs. D. Johnson, Pataskala, best 10 yards domestic linen	3
Miss Cora E. Barrett, Norwalk, best pair woolen knit stockings	2

Mrs. Ira Graham, Middleport, second best pair woolen knit stockings	$1
Mrs. A. Preston, Columbus, best pair cotton knit stockings	2
Mrs. E. A. Clark, Pataskala, second best pair cotton knit stockings	1
Mrs. C. K. Watkins, Columbus, best pair cotton knit socks	2
Mrs. E. A. Clark, Pataskala, second best pair cotton knit socks	1
Mrs. Maggie Graham, Reynoldsburg, best pair woolen knit socks	2
Mrs. Mary Maxwell, Reynoldsburg, second best pair woolen knit socks	1
Mrs. E. A. Clark, Pataskala, best pair linen knit socks	2
Mrs. Mary Maxwell, Reynoldsburg, best pair woolen stockings, by misses under 12 years	2
Mrs. Maggie Graham, Reynoldsburg, best pair worsted knit stockings	2
“ “ best stocking yarn	2
Mrs. R. Schoenberg, Columbus, best woolen knit shirt	2
“ “ best foot mat	1
Miss E. M. Nelson, Columbus, best bed spread	3

Awarding Committee—Louisa A. Barrett, Mrs. A. Gulick, D. C. Kennon.

Needlework.

Nellie Nagle, Columbus, best specimen ornamental needlework	$3
Mrs. D. Jones, Circleville, best gent's shirt	2
Lou. Landauer, Columbus, best chemise	2
Mrs. Rodney Foos, Columbus, best specimen of hemstitching	1
Mrs. R. Schoenberg, Columbus, best pillow shams	2
Lou. Landauer, Columbus, best lady's robe	3
Miss C. W. Ross, Columbus, best child's dress	3
Mrs. W. R. Sprague, Reynoldsburg, best suit of lady's underwear	5
“ “ best lady's skirt	3
Miss Cora E. Barrett, Columbus, best night dress	3
Mrs. E. A. Clark, Pataskala, best bands and sleeves	1
Miss Maggie Graham, Reynoldsburg, best handkerchief	1
Cora E. Barrett, Columbus, best silk quilt	4
Miss A. A. Hymrod, Columbus, best fancy worked quilt	2
Maggie Graham, Reynoldsburg, best cradle quilt	1
Cora E Barrett, Columbus, best patchwork quilt	2
Souder & Bright, Columbus, best display of millinery work	10
“ “ best specimen lady's hat	3
Mrs. A. E. Davis, Columbus, best specimen child's hat	2
Souder & Bright, Columbus, best specimen child's bonnet	2
Miss E. Swisher, Columbus, best display machine work	5
Mrs. J. S. Robinson, Urbana, best display needlework	5
Mrs. A. E. Davis, Columbus, best specimen lady's bonnet	4
J. Gundersheimer, Columbus, display ready-made clothing	10

Awarding Committee—Mrs. W. N. Fisher, Miss Lizzie Sutton, Mrs. C. J. Wetmore, Mrs. N. E. Lovejoy.

Awarding Committee on Ready-made Clothing—H. J. Perks, John Rich, C. Hertenstein.

Braiding and Embroidery.

Mrs. S. A. Baldwin, Columbus, best ottoman cover	$2
Mrs. Theo. Comstock, Columbus, best table cover	3

Mrs. C. Hills, Delaware, best silk embroidered chair cover	$3
Mrs. J. F. Martins, Columbus, best silk embroidered infant's shawl	2
Mrs. C. Hills, Delaware, best silk embroidered sacque	2
“ “ best silk embroidered skirt	2
Mrs. G. W. Stahl, Mt. Vernon, best silk-embroidered child's dress	3
“ “ best silk-embroidered pin-cushion	1
Mrs. C. Hills, Delaware, best silk embroidered slippers	1
Mrs. R. Schoenberg, Columbus, best chenille embroidered slippers	1
Mrs. G. W. Stahl, Mt. Vernon, best specimen chenille embroidery	2
Mrs. Rodney Foos, Columbus, best worsted embroidered chair cover	2
Mrs. E. Frankenberg, Columbus, worsted embroidered sofa cushion	2
Miss Netta Baker, Columbus, best worsted embroidered picture	2
Miss B. C. Myers, Columbus, best display of silk embroidery	10
Miss F. H. Heironimus, St. Louis, Mo., best display of cotton embroidery	5
Mrs. W. B. Brooks, Columbus, best display of linen embroidery	5
Mrs. W. R. Sprague, Reynoldsburg, best display of chenille embroidery	5
Mrs. J. W. Phillips, Springfield, best specimen cretonne applique	3
Miss Lucy Tills, Columbus, best specimen embroidery on Java canvass	3
Mrs. R. Schoenberg, Columbus, best lambrequin for bracket	2
Mrs. W. S. Huff, Columbus, best specimen of braiding	3
Miss Clara Foos, Columbus, best embroidered yoke and cuffs	2

Awarding Committee—Laura Jamison, Cadiz; Mrs. L. L. Pope, Chagrin Falls; Mrs. J. E. Jones, Columbus.

Crochet and other Ornamental Work.

Mrs. Moses Zinn, Groveport, best lamp-stand mat	$1
Miss A. Rankin, Columbus, best lace-work collar	2
Mary Collins, Urbana, best lace-work handkerchief	1
Annie Gale, Columbus, best specimen tetting	1
Mrs. E. Klippart, Columbus, best large afghan	5
Mrs. J. E. Huff, Columbus, best child's afghan	3
Fannie Mumaugh, Lancaster, best crochet shawl	3
Annie Gale, Columbus, best crochet hood	2
Mrs. J. W. Phillips, Springfield, best crochet infant's sacque	2
Miss B. C. Myers, Columbus, best crochet mittens	1
Miss B. C. Myers, Columbus, best crochet collar	1
Miss E. A. Clark, Pataskala, best crochet chair tidy	2
Mrs. R. Schoenberg, Columbus, best crochet work—wool	3
Miss B. C. Myers, Columbus, best display crochet work	5
Mrs. R. Schoenberg, Columbus, best specimen stamping	1
Ida Barker, Columbus, best specimen cut worsted work	2
Celia A. Noe, Reynoldsburg, best specimen hair work	3
Ohio Institute for the Blind, Columbus, best bead work	3
Mrs. C. Hills, Delaware, best moss or lichen work	1
Mary Courtney, Columbus, best specimen of braid of straw or grass	1
Mary Courtney, Columbus, best specimen of feather flowers	1
Miss Mamie Samuel, Columbus, best specimen wax flowers	2
Kate Earl, Columbus, best specimen wax fruit	2
Jos. Sigler, McConnelsville, best specimen feather brush	2
Miss M. E. Rath, Columbus, best motto on perforated paper	2

Mrs. Rodney Foos, Columbus, best evening nubia	$2
Mrs. J. S. Robinson, Urbana, best specimen point lace	3
Mary Zuck, Columbus, best specimen darning on tull	2
Mary M. Ferson, Columbus, best specimen hand lace work	3
Mrs. C. Hills, Delaware, best toilet set	2
L. C. Van Slyke, Columbus, best card receiver	2
Mrs. R. Schoenberg, Columbus, best hanging basket	2
Mrs. M. A. Ackermann, Columbus, best preserved flowers	3
Mrs. L. P. Coman, Hanover, best display porcelain painting	5
Mrs. E. J. Blount, Columbus, best decorated pottery	3

Awarding Committee—L. I. Pope, Chagrin Falls; Caddie Conrad, Columbus; Mrs. E. K. Stewart, Columbus; Mrs. Chas. B. Estep.

Cabinet Ware.

Columbus Cabinet Co., Columbus, best sofa	$10
Halm, Bellows & Butler, Columbus, best lounge	5
Ohio Furniture Co., Columbus, best extension table	8
“ “ office chair	3
Columbus Cabinet Co., Columbus, best set of parlor chairs	8
Halm, Bellows & Butler, Columbus, best center table	5
“ “ “ set parlor furniture, set consisting of one tete-a-tete, two easy chairs, four wall chairs, and one center table	20
Ohio Furniture Co., Columbus, best set of chamber furniture, set consisting of bureau or dressing case, bedstead, wash-stand, three chairs, and a rocker	15
Columbus Cabinet Co., Columbus, best set library furniture, set consisting of book-case, table, sofa, or lounge, and four easy chairs	20
Halm, Bellows & Butler, best set dining-room furniture, set consisting of side-board, extension table, and six dining-room chairs	10
Halm, Bellows & Butler, Columbus, best display of furniture	25
“ “ “ display of mattreses	10
Columbus Cabinet Co., Columbus, best spring-bed bottom	5
“ “ “ spiral spring-bed	3
Ohio Furniture Co., Columbus, best seats and desks for schools	5
“ “ “ writing desks	3
“ “ “ book-case	5
Halm, Bellows & Butler, Columbus, best wardrobe	5
“ “ “ invalid chair or couch	5
“ “ “ display of chairs	10
Columbus Cabinet Co., Columbus, best hall rack	5
“ “ “ pier glass	5
Ohio Furniture Co., Columbus, best mantel glass	5
Freeman, Staley & Morton, best display of curtains	Diploma.
“ “ display of window-shades	Diploma.
Kershaw, Krauss & Putnam, Columbus, best display of hearth-rugs	5

Awarding Committee.—David Taylor, Jr., Mrs. E. J. Blount, Mrs. D. C. Perkins, W. Y. Miles, Mrs. W. Y. Miles, Mrs. J. M. Godman, G. A. Hamberger, George E. Clark.

Factory Goods.

L. Rambo & Co., Dresden, best 3 pieces fancy cassimere, all wool	$5
" " second best 3 pieces fancy cassimere, all wool	3
" " best 3 pieces plain cassimere, all wool	5
" " second best 3 pieces plain cassimere, all wool	3
" " best 5 pieces assorted tweeds, all wool	5
" " second best 5 pieces assorted tweeds, all wool	3
" " best 3 pieces boys' check cassimere, all wool	3
Zanesville Woolen Manufacturing Co., Zanesville, best 5 pieces check or plaid flannel, all wool	5
L. Rambo & Co., Dresden, best 2 pieces white flannel, all wool	3
" " best 2 pieces colored flannel, all wool	3
" " second best 2 pieces colored flannel, all wool	2
" " best two pieces colored twill flannel, all wool	3
" " second best 2 pieces colored twill flannel, all wool	2
Delaware Woolen Manufacturing Co., Delaware, best piece domestic or cotton warp flannel	3
Delaware Woolen Manufacturing Co., Delaware, second best piece domestic or cotton warp or flannel	2
F. Gray & Co., Piqua, best piece 8-4 sheeting flannel, all wool	3
" " second best piece 8-4 sheeting flannel, all wool	2
Zanesville Woolen Manufacturing Co., Zanesville, best 5 pieces 3-4 or 6-4 fancy dress plaids, all wool	5
F. Gray & Co., Piqua, best 3 pairs all wool blankets	3
" " second best 3 pairs all wool blankets	2
Stewart & Mickle, Mechanicsburg, best 25 pounds assorted stocking yarn	3
" " second best 25 pounds assorted stocking yarn	2
J. & H. Clasgens, New Richmond, best 10 pounds Balmoral stocking yarn	3
" " best 10 pounds zephyr stocking yarn	3
L. Rambo & Co., Dresden, best 3 pieces satinets	3
" " second best 3 pieces satinets	2
Zanesville Woolen Manufacturing Co., Zanesville, best 5 pieces jeans	5
" " " second best 5 pieces jeans	3
Delaware Woolen Manufacturing Co., Delaware, best 2 pieces linsey	3
" " " second best 2 pieces linsey	2
Wm. Armbruster, Columbus, best 5 dozen woolen socks and stockings	5
Wm. Armbruster, Columbus, best display of woolen hosiery, including undershirts, drawers, socks, stockings, and gloves	5
L. Rambo & Co., Dresden, best display of woolen goods	10

Awarding Committee—H. G. Perks, Jas. B. Estep, C. Hertenstein, Jno. Rich.

Stationers' Ware.

Thos. W. Odell, Dayton, best display of bound account books	$5
" " best specimen of blank-book	3
Siebert & Lilley, Columbus, best specimen of blank-book paper	3
" " best specimen of printing-paper	3
" " best specimen of writing-paper	3
" " best display of Manilla paper	5

E. O. Randall & Co., Columbus, best display of paper hangings and border	$10
Siebert & Lilley, Columbus, best display of paper boxes	3
" " best display of paste or bonnet boards	3

Awarding Committee—L. I. Pope, Chagrin Falls; C. L. Clark, Columbus; J. B. Williams, Summerfield.

Merchants' and Dealers' Class.

Freeman, Staley & Morton, Columbus, best display of cassimeres	$10
C. L. Clark, Columbus, best display of jeans	5
" " best display of tweeds	5
" " best display of blankets	5
Freeman, Staley & Morton, Columbus, best display of shawls	5
Wm. Burdell, Jr., Columbus, best display of carriage robes made of wool	5
Freeman, Staley & Morton, Columbus, best 10 yards linen diaper	2
" " best 5 dozen pairs cotton wove stockings	3
" " best 5 dozen pairs cotton wove socks	2
" " best 5 pounds linen sewing thread	2
" " best display of buck gloves and mittens	3
" " best display of sheep-skin mats	2
Wm. Burdell, Jr., Columbus, best fur robe	3
Freeman, Staley & Morton, Columbus, best display of oil-cloth table-covers	2
L. W. Rose, Columbus, best display of cordage	2
Wm. Burdell, Jr., Columbus, best display of horse blankets	3
Jos. Gundersheimer, Columbus, best child's dress	3

Awarding Committee—C. Hertenstein, Columbus; James B. Estep, Columbus; Mrs. S. M. Burt, Columbus; Lizzie Sutton, Mt. Washington; Mrs. W. N. Fisher, Columbus.

Boots, Shoes, etc.

Mayer & Getz, Lancaster, best pair dress boots	$3
Mayer & Getz, Lancaster, best pair heavy boots	3
Herzog & Freidman, Columbus, best gent's dress shoes	3
" " best pair Congress gaiters	3
" " best bootees	2

Awarding Committee.—W. C. Coulter, Newark; W. H. Stokes, Waynesville; R. F. Burt, Columbus.

Leather Manufactures.

J. M. Brand, Columbus, best set of carriage or coach harness	$5
" " best set of light double harness	5
" " best set of single heavy harness	3
Wm. Burdell, Columbus, best set of single light harness	5
" " best set of double harness for farm use	5
" " best set of double harness for wagon use	5
" " best light harness collar	1
" " best draft harness collar	1
" " best display of halters	3
" " best riding bridle	1
" " best man's saddle	3
" " best lady's saddle	5
" " best display of saddlery and harness	8

James W. Meek, Columbus, best display of sole leather	$3
“ “ best display of upper leather	3
“ “ best display of harness leather	3
“ “ best display of skirting leather	3
“ “ best half dozen calf skins	3
“ “ best half dozen kip skins	3
Siebert & Lilley, Columbus, best display of sheep skins (skivers)	2

Awarding Committee.—W. H. Stokes, Waynesville; J. C. Stevens, Kenton; W. C. Coulter, Newark.

FIFTH DEPARTMENT.

Farm Products—Flour, Grain, and Seeds.

P. Crow, Newark, best crop of 5 acres barley	$30
A. A. Taylor, Loudenville, best barrel white wheat flour, Ohio manufacture, and Ohio wheat	Diploma.
J. T. Corbin, Dublin, second best barrel white wheat flour, Ohio manufacture, and Ohio wheat	$3
J. T. Corbin, Dublin, best barrel red wheat flour	Diploma.
S. D. Corbin, Scioto, second best barrel red wheat flour	$3
John H. Benson & Co., Cardington, best two bushels white winter wheat	8
John H. West, Kingston, second best two bushels white winter wheat	4
George W. Bittinger, Plymouth, best two bushels amber winter wheat	8
“ “ second best two bushels amber winter wheat	5
John H. West, Kingston, best two bushels red winter wheat	8
Wm. Wright, Lockbourne, second best two bushels red winter wheat	5
H. Hefflebower, Monclova, best sample of rye, not less than one-half bushel	3
George W. Bittinger, Plymouth, second best sample of rye, not less than one-half bushel	2
J. B. Dort, New California, best sample of oats, not less than one-half bushel	3
George Dague, Hope, second best sample of oats, not less than one-half bushel	2
John H. Benson & Co., Cardington, best sample of one-half bushel barley	3
George W. Bittinger, Plymouth, second best sample of one-half bushel barley	2
“ “ best sample buckwheat, not less than one-half bushel	3
“ “ best sample timothy, not less than one-half bushel.	3
Henry Hymus, Somerset, best sample clover seed, not less than one-half bushel	8
J. W. Waltman, Springfield, best sample blue grass seed, not less than one-half bushel	3
“ “ best sample red top seed, not less than one-half bushel.	3
Henry Ridenour, Westerville, best two bushels yellow corn, in ear	5
F. M. Whipps, Marion, second best two bushels yellow corn, in ear	3
Henry Hymus, Somerset, best sample flax seed	3
B. C. Simms, Groveport, best two bushels white corn, in ear	5
F. M. Whipps, Marion, best display pop corn	2
Jac. H. Cole, Harlem, second best display pop corn	1
F. M. Whipps, Marion, best collection of corn in variety	5
J. H. Cole, Richwood, best bushel of corn meal	3
Mrs. Nettie Livingston, Reynoldsburg, best specimen dried corn	3
F. M. Whipps, Marion, second best sample dried corn	2
Mrs. S. W. Park, Hope, best sample dried fruits	3
E. W. & C. W. Blair, Columbus, second best sample dried fruits	2

Thos. Bushnell, Haysville, best display of cereals in straw or stalk	$5
A. W. Livingston & Sons, Reynoldsburg, best peck of white beans, dry	2
Lewis Swickard, Hope, second best peck of white beans, dry	1
J. S. Keckley, Marysville, best display of beans, not less than 20 varieties	5
A. W. Livingston & Sons, Reynoldsburg, best half peck field peas, dry	2
M. D. Clark, Elyria, second best half peck field peas, dry	1
A. W. Livingston & Sons, Reynoldsburg, best and greatest variety of peas, dry	3
Turner Stimmel, Columbus, best 5 pounds Ohio seed leaf tobacco	3
A. W. Livingston & Sons, Reynoldsburg, best collection of garden seeds	5
M. B. Bateham, Painesville, best display of meadow or pasture grass seeds, to include at least 20 varieties, including clover	10
Thos. Bushnell, Haysville, second best display of meadow or pasture grass seeds, to include at least 20 varieties, including clover	5
M. B. Bateham, Painesville, best display of grasses, properly named or labeled, and containing at least 15 species or varieties of meadow or pasture grasses	15

Awarding Committee.—J. B. Williams, Summerfield; F. P. Vergon, Delaware; Ervin Moore, Canal Winchester.

We, the undersigned committee, having been called by the member in charge to review the awards on grass seeds, find the premiums awarded should be changed, as many now marked as No. 1 are merely weeds, and we therefore make the change.

Special Committee.—J. M. Thompson, S. N. Titus, L. Smith.

Cheese.

B. B. Herrick, Wellington, best and largest lot	$15
" " best cheese under 1 year old	5

Factory made.

D. L. Pope & Son, Welshfield, best and largest lot	$20
" " best cheese under 1 year old	5

Awarding Committee—R. P. Cannon, Aurora; J. W. Waltman, Springfield; J. S. Leaming.

Sweepstakes on Cheese.

B. B. Herrick, Wellington, largest display of the best cheese	Silver Medal.

Awarding Committee—Mrs. Mary Maxwell, Reynoldsburg; S. N. Titus, J. M. Thompson.

Competitors in entry books 70 and 71 (cheese and sweepstakes on cheese) were required to state, in writing, the time the cheese was made; the number of cows kept; whether the cheese was made from one, two, or more milkings; whether any addition was made of cream; the method of preserving and preparing rennet; the mode and amount of pressure, and the treatment of the cheese afterward; and to answer the following questions, in writing, and hand them to the Secretary when making the entry:

1st. What do you consider the best breed of cows for dairy purposes?

2d. What variety of grasses produce the best pasturage for making cheese?

3d. Does long-continued grazing for dairy purposes exhaust or improve your land for dairying?

4th. At what price per acre can land be profitably used for dairy purposes in Ohio?

5th. What is the proper temperature of a room for curing cheese, and what effect does a higher or lower temperature produce upon the flavor and other qualities of the cheese?

6th. State in detail your process of making and curing cheese, including the preserving and preparing rennet for use, etc.

No premium to be awarded unless all the rules are fully complied with, and all the questions properly answered.

Statement of B. B. Herrick.

The cheese were made in July and August. Thirty-two cows are kept. Two milkings (night and morning) are used. No addition of cream was made. The rennet, when taken from the calf, is salted and dried. In preparing for use, the salt whey that runs from the cheese in pressing is used; one rennet (if good, strong ones) to the gallon. A screw press is used, with a pressure of from 2,500 to 3,000 lbs., for about twenty hours' time, when they are removed to the curing-room, where they are placed on shelves, both faces oiled; after that, turned and rubbed every day until ready for market.

1st. Shorthorns, Durhams, and grades bred from a milking family.

2d. White clover, timothy, red clover, blue-grass, and red-top in low ground.

3d. If all the manure and fertilizers produced are carefully saved, used with economy, and a proper rotation of crops and pasture observed, the land will improve.

4th. It depends entirely upon the soil, location, manner of handling, amount of labor expended, and price of dairy products. No definite answer can be given.

5th. I consider from 65° to 75° the most desirable for curing cheese—a higher degree curing too fast, making it sharp, and frequently strong; a lower degree, sour and bitter.

8th. The night's milk is put into the vat, cooled to 70°; in the morning the cream is stirred in, the morning's milk put in, the whole heated to 83° to 85°, sufficient rennet added to coagulate in about forty minutes; it is then cut both ways and left until the whey separates sufficiently to cover the curd; it is now cut horizontally and left ten or fifteen minutes more. The temperature is now raised gradually to 102°, where it is held until thoroughly cooked. In the mean time it is stirred and cut until the pieces of curd are about the size of kernels of wheat and corn. When the cooking is finished the whey is run off, curd well cooled, and stirred to prevent packing; salted 2¼ pounds salt to the hundred, placed in the hoops and pressed twenty hours with a screw press, 3,000 pounds pressure. The cheese are then placed in the curing-room, oiled on both faces, and turned every day until ready for market.

The rennet, when taken from the calf, is salted and dried; in preparing for use, the sour whey that runs from the cheese in pressing is used, one rennet to the gallon, if good, strong ones; left to soak several days; the liquor is then strained, and is ready for use.

Butter, Bread, etc.

Mary Maxwell, Reynoldsburg, best lot 10 pounds butter in rolls	$5
Maggie Graham, Reynoldsburg, second best lot 10 pounds butter in rolls	3
Maggie Graham, Reynoldsburg, best lot, not less than 25 pounds, made in May or June	8
Mrs. J. Arnold, Columbus, second best lot, not less than 25 pounds, made in May or June	5
Mary Maxwell, Reynoldsburg, best tub or firkin, not less than 50 pounds, made at any time	8

Bread and Cereal Food.

Mrs. Mary Hogan, Columbus, best 3 loaves of domestic white bread	$2
J. D. Hogan, Columbus, best 4 loaves of baker's bread, not less than 48 hour's old	3
Mrs. N. E. Lovejoy, Columbus, best soda biscuit	2
Mrs. J. F. Harris, Columbus, best crackers (butter)	2
Mary Maxwell, Reynoldsburg, best domestic corn bread	2
Maggie Graham, Reynoldsburg, best domestic rye bread	2
Mary Maxwell, Reynoldsburg, best domestic brown bread	2
Mrs. Mary Hogan, Columbus, best domestic graham bread	2
Miss Mary M. Ferson, Columbus, best domestic sponge cake	2
Mrs. J. T. Harris, Columbus, best domestic raised biscuits	2
Maggie Graham, Reynoldsburg, best yeast for domestic use	2
Maggie Graham, Reynoldsburg, best 3 hams, mode of preserving stated in writing, one of the hams cooked	8
Mary Maxwell, Reynoldsburg, second best 3 hams, mode of preserving stated in writing, one of the hams cooked	4

Your committee have carefully examined all the entries in this book, and find the articles on exhibition, without exception, of first-rate quality. Respectfully,

Awarding Committee—R. P. Cannon, Aurora; Mrs. S. Moore, Delaware; Mrs. D. Crouse, Kingston.

Honey, Preserves, Pickles, etc.

Reigel & Baldosier, Adelphia, best 10 pounds of honey	$3
J. P. Swisher, Hebron, second best 10 pounds of honey	2
Mrs. S. W. Park, Hope, best canned tomatoes	2
Mrs. J. W. Waltman, Springfield, best canned blackberries	2
Mrs. Maggie Graham, Reynoldsburg, best canned raspberries	2
Mrs. Maggie Graham, Reynoldsburg, best canned peaches	2
Mrs. J. W. Waltman, Springfield, best canned pears	2
Mary Yeazel, Springfield, best canned apples	2
Mary Maxwell, Reynoldsburg, best canned quinces	2
Mrs. B. B. Herrick, Wellington, best canned cherries	2
Mary Maxwell, Reynoldsburg, best canned gooseberries	2
Mrs. S. W. Park, Hope, best canned currants	2
Mrs. S. W. Park, Hope, best canned grapes	2
Mary Maxwell, Reynoldsburg, largest and best variety canned fruits	8
Mrs. J. W. Waltman, Springfield, largest and best display pickles	8
Mrs. S. W. Park, Hope, largest and best display jellies	8
Mrs. M. E. Boyer, Circleville, best apple jelly	2
Mrs. J. W. Waltman, Springfield, best currant jelly	2
Maggie Graham, Reynoldsburg, best peach jelly	2
Mary Yeazel, Springfield, best quince jelly	2
Maggie Graham, Reynoldsburg, best preserved quinces	2
Mary Yeazel, Springfield, best preserved peaches	2
Mrs. S. W. Park, Hope, best preserved pears	2
Mary E. Boyer, Circleville, best preserved apples	2
" " best preserved plums	2
Mary Maxwell, Reynoldsburg, best tomato catsup	2
Mary E. Boyer, Circleville, best cucumber catsup	2

Mrs. N. E. Lovejoy, Columbus, best pickled cucumbers	$2
Maggie Graham, Reynoldsburg, best pickled peaches	2
Mary Maxwell, Reynoldsburg, best pickled walnuts	2
“ “ best pickled butternuts	2
Mary A. Yeazel, Springfield, best pickled mangoes	2
Mary Maxwell, Reynoldsburg, best pickled melons	2
“ “ best pickled onions	2
B B. Herrick, Wellington, best gallon maple sirup	2
M. M. Copeland, Galena, best 10 pounds maple sugar	2
Mary E. Boyer, Circleville, best cider vinegar	2

Awarding Committee—Mrs. S. Moore, Delaware; T. F. Joy, Delaware; Mrs. W. L. Hamilton, Republic; Ella Morrow, Marion; M. J. Gale, Columbus.

Potatoes.

F. M. Whipps, Marion, best half bushel Campbell's Late Rose	$3
Daniel Lawrence, Marion, best half bushel Peachblow potatoes	3
J. S. Keckley, Marysville, best half bushel Monitor, or Shaker Russet, or Shotwell potatoes	2
Louis Swickard, Hope, best half bushel Buckeye potatoes	2
F. M. Whipps, Marion, best half bushel Early Rose potatoes	3
M. D. Clark, Elyria, best half bushel any new variety	5
S. H. Rinehart, Rich Hill, second best half bushel any new variety	3
J. S. Keckley, Marysville, best 10 varieties Irish potatoes, half peck of each variety.	8
M. D. Clark, Elyria, second best 10 varieties Irish potatoes, half peck of each variety	4
David Williams, Columbus, best half bushel of any variety	3
B. C. Sims, Groveport, best half bushel sweet potatoes	3
“ “ best display sweet potatoes	5

Awarding Committee—C. W. Taylor, Sandusky; Wm. Sims, Groveport; B. B. Herrick, Wellington.

Vegetables.

Samuel Deffenderfer, Hayesville, best 12 parsnips	$2
A. W. Livingston & Sons, Reynoldsburg, second best 12 parsnips	1
Daniel Lawrence, Marion, best 12 carrots	2
A. W. Livingston & Sons, Reynoldsburg, second best 12 carrots	1
W. F. Barr, Reynoldsburg, best 12 long blood beets	2
Louis Swickard, Hope, second best 12 long blood beets	1
M. D. Clark, Elyria, best 12 turnip beets	2
F. M. Whipps, Marion, second best 12 turnip beets	1
W. F. Barr, Reynoldsburg, best display beets in variety and quality	3
F. M. Whipps, Marion, best 12 turnips for table use	3
M. D. Clark, Elyria, second best 12 turnips for table use	1
A. W. Livingston & Sons, Reynoldsburg, best peck tomatoes	2
W. V. Decker, Groveport, second best peck tomatoes	1
A. W. Livingston & Sons, Reynoldsburg, best display of tomatoes in variety and quality	5
“ “ best 6 drum-head cabbages	2
Daniel Lawrence, Marion, second best 6 drum-head cabbages	1
A. W. Livingston & Sons, Reynoldsburg, best 6 heads Dutch cabbage	2
Daniel Lawrence, Marion, second best 6 heads Dutch cabbage	1
W. F. Barr, Reynoldsburg, best 6 heads any other variety	2

J. S. Keckley, Marysville, best peck red onions	$2
W. F. Barr, Reynoldsburg, second best peck red onions	1
B. C. Sims, Groveport, best peck of yellow onions	2
J. S. Keckley, Marysville, second best peck of yellow onions	1
M. D. Clark, Elyria, best peck white onions	2
J. B. Dort, New California, second best peck white onions	1
" " best peck potato onions	2
W. F. Barr, Reynoldsburg, second best peck potato onions	1
Samuel Deffenderfer, Hayesville, best display onions in variety and quality	3
W. F. Barr, Reynoldsburg, best half peck of peppers for pickling	2
A. W. Livingston & Sons, Reynoldsburg, second best half peck of peppers for pickling	1
Jos. Sigler, McConnelsville, best display peppers in variety and quality	3
A. W. Livingston & Sons, Reynoldsburg, best 12 roots salsify	2
W. F. Barr, Reynoldsburg, second best 12 roots salsify	1
A. W. Livingston & Sons, Reynoldsburg, best 6 stalks celery	2
W. F. Barr, Reynoldsburg, second best 6 stalks celery	1
" " best half dozen marrow squashes	2
" " best half dozen Hubbard squashes	2
Henry Fishbaugh, Columbus, second best half dozen Hubbard squashes	1
Isaac Shoaf, Columbus, best 3 winter crook-neck squashes	2
W. F. Barr, Reynoldsburg, second best 3 winter crook-neck squashes	1
Henry Steinmetz, Columbus, best French squash	2
" " second best French squash	1
W. F. Barr, Reynoldsburg, best display of squashes in variety and quality	3
A. W. Livingston & Sons, Reynoldsburg, best 6 pumpkins	2
W. F. Barr, Reynoldsburg, best display of pumpkins in variety and quality	3
A. W. Livingston & Sons, Reynoldsburg, best dozen sweet corn, green	2
F. M. Whipps, Marion, second best dozen sweet corn, green	1
" " best display sweet corn in variety and quality	3
W. F. Barr, Reynoldsburg, best 3 Mountain Sweet watermelons	2
A. W. Livingston & Sons, Reynoldsburg, second best 3 Mountain Sweet watermelons	1
B. C. Sims, Groveport, best 3 watermelons of any other variety	3
Dill Weigand, South Bloomfield, second best 3 watermelons of any other variety	2
A. W. Livingston & Sons, Reynoldsburg, best 3 green-flesh muskmelons	2
W. F. Barr, Reynoldsburg, second best 3 green-flesh muskmelons	1
" " best 3 yellow-flesh muskmelons	2
H. Pinney, Ostrander, second best 3 yellow-flesh muskmelons	1
A. W. Livingston & Sons, Reynoldsburg, best and greatest display of melons of all varieties, both water and muskmelons	5
A. W. Livingston & Sons, Reynoldsburg, best display of cucumbers	3
M. D. Clark, Elyria, best half peck Lima beans, green, in pods	2
W. F. Barr, Reynoldsburg, second best half peck Lima beans, green, in pods	1
A. W. Livingston & Sons, Reynoldsburg, best half peck kidney bush beans, green, in pods	2
W. F. Barr, Reynoldsburg, second best half peck kidney bush beans, green, in pods	1
J. S. Keckley, Marysville, best and greatest variety of garden beans	3
L. M. Ayres, Urbana, best half peck garden peas	2
A. W. Livingston & Sons, Reynoldsburg, second best half peck garden peas	1

A. W. Livingston & Sons, Reynoldsburg, best 3 purple egg plants	$2
" " " best and greatest variety of vegetables raised by one exhibiter	10
W. F. Barr, Reynoldsburg, second best and greatest variety of vegetables raised by one exhibiter	5

We, the undersigned committee, do find a splendid show of vegetables, etc., in this department, all of which are worthy of commendation.

Awarding Committee.—J. S. Leaming, Wilmington; J. W. Waltman, Springfield; J. G. Armstrong, Licking county.

SIXTH DEPARTMENT.

Fruits, Horticultural Products, and Fine Arts—Summer and Fall Apples.

G. F. Newton, Millersburg, best 6 varieties	$5
S. Creighton & Elsea, Lithopolis, second best 6 varieties	3
Hurst & Hurst, Chillicothe, best 3 varieties	3
A. M. Gatch & Sons, Milford, second best 3 varieties	2
H. Kellogg & Sons, Toledo, best 3 varieties of large, size and beauty to rule	2
Hurst & Hurst, Chillicothe, best 3 varieties for market, profit to rule	2
Henry Gulick, Bevis, second best 3 varieties for market, profit to rule	1
S. Creighton & Elsea, Lithopolis, best variety of dessert apples, quality to rule	2
A. M. Gatch & Sons, Milford, second best variety of dessert apples, quality to rule	1
T. E. Morey, Sandusky, best and most handsomely arranged basket of apples, containing ½ bushel and made up of 6 varieties	3
A. M. Gatch & Sons, Milford, second best and most handsomely arranged basket of apples, containing ½ bushel and made up of 6 varieties	2
S. Creighton & Elsea, Lithopolis, best display in variety and quality, 15 varieties	10
G. F. Newton, Millersburg, second best display in variety and quality, 15 varieties	5

Awarding Committee.—G. H. Miller, N. Julian, F. M. Black.

Winter Apples.

G. F. Newton, Millersburg, best 10 varieties	$8
H. Kellogg & Son, Toledo, second best 10 varieties	5
Samuel Barr, Amanda, best 5 varieties	5
T. E. Morey, Sandusky, second best 5 varieties	3
S. Barr, Amanda, best 5 plates of large, size and beauty to rule	5
G. F. Newton, Millersburg, second best 5 plates of large, size and beauty to rule	3
T. E. Morey, Sandusky, best variety of dessert, quality to rule	1
Hurst & Hurst, Chillicothe, second best variety of dessert, quality to rule	1
Samuel Barr, Amanda, best 6 varieties for market, profit to rule	8
G. F. Newton, Millersburg, second best 6 varieties for market, profit to rule	5
T. E. Morey, Sandusky, best half bushel basket of 10 varieties	5
S. Creighton & Elsea, Lithopolis, second best half bushel basket of 10 varieties	3
G. F. Newton, Millersburg, best display of 30 varieties, beauty and quality to rule	15
J. L. Teal, Perrin's Mills, second best display of 30 varieties, beauty and quality to rule	8

The committee respectfully report as follows: That instructions should be printed in the premium list of the next fair to govern exhibiters in placing their fruits upon the table for exhibition, and if necessary to the superintendent, so that each class may have a space allotted to it for the convenience of the awarding committees, as your committee have found it almost impossible to find some of the entries. It is our opinion that, properly arranged, one-half the committee could accomplish the work in less time and in a more satisfactory manner than all do under the present arrangement, allowing the exhibiters to place all their fruit in one mass, without regard to the entries they may make. Your committee would further suggest that exhibiters be limited to entering but two plates each in variety for dessert. As it now is, some think they may enter but one plate, and others as many as there are varieties of apples.

All of which is respectfully submitted.

Awarding Committee.—J. J. Harrison, C. W. Taylor, Jos. Sigler.

Plate Apples.

Hurst & Hurst, Chillicothe, best plate of 5 American Summer Permain	$2
G. M. High, Middle Bass, best plate of 5 Baldwin	2
Hurst & Hurst, Chillicothe, best plate of 5 Bellflower	2
G. F. Newton, Millersburg, best plate of 5 Belmont	2
Hurst & Hurst, Chillicothe, best plate of 5 Ben Davis	2
A. M. Gatch & Son, Milford, best plate of 5 Clermont	2
G. F. Newton, Millersburg, best plate of 5 Duchess of Oldenburg	2
G. M. High, Middle Bass, best plate of 5 Fall Pippin	2
Hurst & Hurst, Chillicothe, best plate of 5 Fall Wine	2
G. F. Newton, Millersburg, best plate of 5 Gravenstein	2
Hurst & Hurst, Chillicothe, best plate of 5 Grimes' Golden	2
J. L. Teal, Perrin's Mills, best plate of 5 Hubbardstown Nonsuch	2
J. S. Vandervort, New Antioch, best plate of Fallawater	2
Hurst & Hurst, Chillicothe, best plate of 5 Jonathan	2
G. F. Newton, Millersburg, best plate of 5 King of Tompkins County	2
S. Creighton & Elsea, Lithopolis, best plate of 5 Jeffries	2
" " " 5 Northern Spy	2
Thos. Bushnell, Haysville, best plate of 5 Ohio Nonpareil	2
Wm. S. Powell, Elyria, best plate of 5 Peck's Pleasant	2
S. R. Moore, West Zanesville, best plate of 5 Porter	2
J. S. Vandervort, New Antioch, best plate of 5 Rambo	2
J. L. Teal, Perrin's Mills, best plate of 5 Red Canada	2
Thos. Bushnell, Haysville, best plate of 5 Rhode Island Greening	2
S. R. Moore, West Zanesville, best plate of Rome 5 Beauty	2
J. L. Teal, Perrin's Mills, best plate of 5 Roxbury Russet	2
Henry Gulick, Bevis, best plate of 5 Smith's Cider	2
J. W. Williams, Harlem, best plate of 5 Twenty Ounce	2
Creighton & Elsea, Lithopolis, best plate of 5 Western Beauty	2
J. S. Vandervort, New Antioch, best plate of 5 White Pippin	2
A. M. Gatch & Son, Milford, best plate of 5 Benoni	2

Awarding Committee.—S. R. Moore, Samuel Barr, M. C. Dresbach.

Peaches, Quinces, and Plums—Peaches.

Hurst & Hurst, Chillicothe, best 6 varieties of 6 each	$5
M. B. Bateham, Painesville, second best 6 varieties of 6 each	3
" " best 3 varieties of 6 each	3

Hurst & Hurst, Chillicothe, second best 3 varieties of 6 each	$1
N. Ohmer, Dayton, best plate of 1 variety	2
J. A. Fetters, Lancaster, second best plate of 1 variety	1
Henry Eyer, Fletcher, best new seedling or variety, approved by the committee	2
Hurst & Hurst, Chillicothe, best display of not less than 12 varieties, beauty and quality to govern	10
A. M. Gatch & Sons, Milford, second best display of not less than 12 varieties, beauty and quality to govern	5

Quinces.

Hurst & Hurst, Chillicothe, best 12 quinces	$3
" " best peck of quinces	3
S. Creighton & Elsea, Lithopolis, second best peck of quinces	2

Plums.

Hurst & Hurst, Chillicothe, best display, not less than 10 varieties	$5
A. M. Gatch & Sons, Milford, second best display, not less than 10 varieties	3
" " best 3 varieties of 6 each	2
Hurst & Hurst, Chillicothe, second best 3 varieties of 6 each	1
Samuel Irons, Lebanon, best plate of 12 specimens	2

The grandest display, especially of peaches, we have ever seen at the State Fair.

Awarding Committee—R. J. Black, Asa Toberan, J. T. Busby.

Pears.

N. Ohmer, Dayton, best 6 varieties of summer and fall	$8
Leo Weltz, Wilmington, second best 6 varieties of summer and fall	5
N. Ohmer, Dayton, best 12 varieties of summer, fall, and winter	10
Leo Weltz, Wilmington, second best 12 varieties of summer, fall, and winter	5
Hurst & Hurst, Chillicothe, best half peck Seckel	3
Henry Gulick, Bevis, best half peck Bartlett	3
" " best plate of 5 Bartlett	2
Thos. Bushnell, Hayesville, best plate of 5 Belle Lucrative	2
H. Gulick, Bevis, best plate of 5 Beurre Bosc	2
Frank Ford, Ravenna, best plate of 5 Beurre Clairgeau	2
G. M. High, Middle Bass, best plate of 5 Beurre d'Anjou	2
Samuel Deffenderfer, Hayesville, best plate of 5 Beurre Diel	2
J. L. Teal, Perrin's Mills, best plate of 5 Columbia	2
Frank Ford, Ravenna, best plate of 5 Doyenne Boussock	2
N. Ohmer, Dayton, best plate of Duchess d'Angouleme	2
Jas. E. Carpenter, Attica, best plate of 5 Flemish Beauty	2
N. Ohmer, Dayton, best plate of 5 Howell	2
" " best plate of 5 Lawrence	2
Jas. E. Carpenter, Attica, best plate of 5 Louise Bonnie de Jersey	2
Thos. Bushnell, Hayesville, best plate of 5 Onondaga	2
H. Kellogg & Son, Toledo, best plate of 5 Seckel	2
J. T. Gray, Groveport, best plate of 5 Sheldon	2
H. Gulick, Bevis, best plate of 5 Vicar of Winkfield	2
" " best 3 plates of large—size and beauty to rule	3

Leo Weltz, Wilmington, second best 3 plates of large—size and beauty to rule	$2
N. Ohmer, Dayton, best 6 varieties of market—profit to rule	6
Leo Weltz, Wilmington, second best 6 varieties of market—profit to rule	3
Jas. E. Carpenter, Attica, best new variety, approved by committee	3
J. L. Teal, Perrin's Mills, best variety of dessert—quality to rule	2
Leo Weltz, Wilmington, best display of 20 varieties	15
N. Ohmer, Dayton, second best display of 20 varieties	8

Your committee found the largest and finest collection of pears that we have ever seen in Ohio, comprising one hundred and forty entries. In many cases it was difficult to decide where the preference should be given.

Awarding Committee—Chas. Carpenter, J. A. Fetters, S. S. Boyd.

County Fruits.

A. M. Gatch & Sons, Milford, Union county, best and largest collection of fruits of various kinds from any county in Ohio	$40
D. D. Reiggles, Circleville, Pickaway county, second best and largest collection of fruits of various kinds from any county in Ohio	25

We found five large and fine collections on exhibition, embracing from 110 to 150 plates each, and nearly all kinds of fruits. The collection from Ross county was the most extensive, but was excluded from competition on account of the varieties not being generally named or labeled, as required by the rules in the printed schedule.

Awarding Committee—M. B. Bateham, G. S. Innis, N. Ohmer.

Grapes—Hardy.

G. M. High, Middle Bass, best 10 varieties, not less than 3 bunches each	$10
J. Pfiffner, Delaware, second best 10 varieties, not less than 3 bunches each	5
G. M. High, Middle Bass, best 6 varieties, not less than 3 bunches each	8
J. M. Linxweiler, Dayton, second best six varieties, not less than 3 bunches each	5
G. M. High, Middle Bass, best 3 varieties, 3 bunches each	5
J. M. Linxweiler, Dayton, second best 3 varieties, 3 bunches each	3
Fred. Nuding, Circleville, best new and valuable seedling not before exhibited at the Ohio State Fair	3
G. M. High, Middle Bass, best display of not less than 15 varieties, 3 bunches each	10
J. L. Teal, Perrin's Mills, best 6 bunches Catawba	2
Conrad Schenck, Dayton, best 6 bunches Concord	2
Jac. Decker, Dayton, best 6 bunches Croton	2
G. M. High, Middle Bass, best 6 bunches Delaware	2
" " best 6 bunches Eumelan	2
J. M. Linxweiler, Dayton, best 6 bunches Goethe	2
G. M. High, Middle Bass, best 6 bunches Hartford Prolific	2
" " best 6 bunches Iona	2
J. L. Teal, Perrin's Mills, best 6 bunches Ives	2
J. Pfiffner, Delaware, best 6 bunches Lady	2
" " best 6 bunches Martha	2
G. M. High, Middle Bass, best 6 bunches Merrimack	2
J. A. Fetters, Lancaster, best 6 bunches Norton's Virginia	2
G. M. High, Middle Bass, best 6 bunches Rebecca	2

G. M. High, Middle Bass, best 6 bunches Salem	$2
" " best 6 bunches Walter	2
" " best 6 bunches Wilder	2

Awarding Committee—G. F. Newton, Millersburg; J. L. Teal, Perrin's Mills; M. B. Bateham, Painesville.

Native Wines.

Wehrle, Werk & Son, Middle Bass, best 3 bottles Catawba wine	$5
J. J. Boving, Lancaster, best 3 bottles Norton wine	5
Wehrle, Werk, & Son, Middle Bass, best 3 bottles Delaware wine	5
" " best 3 bottles Ives wine	5
" " best 3 bottles Concord wine	5
" " best display pure grape wine made in Ohio	Sil. med.

Awarding Committee—The. Mithoff, Ferdinand Kempel, Wm. Van Heyde.

Flowers and Plants—Professional List.

L. Underwood, Columbus, best collection of plants and finest arrangement	$20
Batchelder & Thorpe, Cleveland, best single specimen plant	5
Leo Weltz, Wilmington, best collection of palms	15
R. G. Hanford & Son, Columbus, best single specimen plant	5
Morris Evans, Columbus, best collection of ferns	15
Batchelder & Thorpe, Cleveland, best single specimen plant	5
" " best collection variegated plants	20
R. G. Hanford & Son, Columbus, best single specimen plant	3
Morris Evans, Columbus, best collection of begonias	10
John B Romans, Columbus, best single specimen plant	3
R. G. Hanford & Son, Columbus, best collection cannas	5
" " best single specimen	3
" " best collection of ornamental grasses	5
" " best single specimen plant	2
Leo Weltz, Wilmington, best collection of evergreens	15
R. G. Hanford & Son, Columbus, best single specimen plant	5
Batchelder & Thorpe, Cleveland, best collection of plants on trellis work	5
" " best single specimen plant	2
" " best single specimen of aloe	1
R. G. Hanford & Son, Columbus, best collection of caladiums	8
Morris Evans, Columbus, best single specimen plant	2
Batchelder & Thorpe, Cleveland, best collection petunias	3
" " best collection of new plants	10
" " best collection of geraniums	5
" " best single specimen plant	2
" " best collection of roses	10
R. G. Hanford & Son, Columbus, best single specimen plant	3
Batchelder & Thorpe, Cleveland, best arch of living plants	5
J. F. Sked & Co., Westerville, best ribbon bed of living plants	3
Morris Evans, Columbus, best pair of vases	5
L. Underwood, Columbus, best six hanging baskets	6
" " best single basket	2

Cut Flowers.

Miss Maggie Evans, Columbus, best pair of hand bouquets	$5
“ “ best pair parlor bouquets (15 inches)	5
L. Underwood, Columbus, best display of floral designs	8
Leeds & Co., Richmond, Ind., best display of cut flowers	8
“ “ best display of cut roses	5
R. G. Hanford & Son, Columbus, best display of cut dahlias	3
Clara McClelland, Columbus, best display of cut gladiolus	3
Morris Evans, Columbus, best display of cut verbenas	3
L. Underwood, Columbus, best aquarium	10

We would respectfully recommend for your consideration the propriety of awarding second premiums on all plants and cut flowers.

Awarding Committee.—S. S. Jackson, George W. Pinney, Wm. McKellar, F. Pentland.

Plants and Flowers—Amateur List.

Mrs. J. M. Pugh, Columbus, best collection of stove and green-house plants, not less than 20 varieties	$10
Mrs. E. K. Stewart, Columbus, best collection of 12 varieties	8
Mrs. W. H. Ragan, Columbus, second best collection of 12 varieties	5
Mrs. Franklin Gale, Columbus, best specimen plant in or out of bloom	5
Mrs. W. H. Ragan, Columbus, best collection of not less than 10 varieties of variegated leaved plants	8
Mrs. E. K. Stewart, Columbus, second best collection of not less than 10 varieties of variegated leaved plants	5
Mrs. J. M. Pugh, Columbus, best single specimen of variegated leaved plant	3
Mrs. N. E. Lovejoy, Columbus, best collection of coleus, not less than 10 varieties	5
Mrs. Jos. Bradford, Columbus, best 6 specimens coleus	3
Mrs. W. H. Ragan, Columbus, best collection of begonias, not less than 10 varieties	8
Miss Kittie Vanharlingen, Columbus, best specimen of begonia	3
Mrs. J. H. Klippart, Columbus, best collection of aloes and cactus in pots	3
“ “ best specimen of cactus	2
Mrs. J. M. Pugh, Columbus, best collection of fuchsias, growth and variety considered	3
Mrs. N. E. Lovejoy, Columbus, best collection of geraniums in bloom	3
“ “ second best collection gold and silver tri-color leaved geraniums	3
Myra Park, Columbus, best specimen of geranium	2
Mrs. W. H. Ragan, Columbus, best collection of ferns and lycopodiums	5
Mrs. J. M. Pugh, Columbus, second best collection of ferns and lycopodiums	2
Mrs. N. E. Lovejoy, Columbus, best collection of verbenas growing in pots	5
“ “ best collection of roses in bloom	5
Mrs. J. M. Pugh, Columbus, best collection of plants on trellises	5
Mrs. P. J. Lofland, Columbus, best 6 hanging baskets of living plants	5
Mrs. Jos. Bradford, Columbus, second best 6 hanging baskets of living plants	3
“ “ best single basket	2

Cut Flowers.

Mrs. E. K. Stewart, Columbus, largest and best collection of roses, named	$5
Mrs. P. J. Lofland, Columbus, largest and best collection of verbenas, named varieties	5

Mrs. E. K. Stewart, Columbus, second largest and best collection of verbenas, named varieties	**$3**
Mrs. Jos. Bradford, Columbus, best 12 distinct named verbenas	**3**
" " largest and best collection of phloxes, named varieties	**3**
Mrs. E. K. Stewart, Columbus, second largest and best collection of phloxes, named varieties	**2**
Mrs. T. D. Garvin, Columbus, best display of asters	**3**
Mrs. Jos. Bradford, Columbus, best display of balsams	**3**
Mrs. P. J. Lofland, Columbus, best display of pansies	**3**
Mrs. N. E. Lovejoy, Columbus, best display of double petunias	**2**
" " best display of variegated petunias	**2**
" " second best display of gladiolus	**2**
Mrs. Jos. Bradford, Columbus, best display of coxcombs and amaranths	**2**
" " best display of double zinnias	**2**
Mrs. E. K. Stewart, Columbus, best display of cut flowers in variety and quality other than above	**5**
Mrs. P. J. Lofland, Columbus, second best and greatest display of cut flower in variety and quality other than above	**3**

***Awarding Committee.*—S. S. Jackson, Wm. McKellar, Jno. Thorpe, F. Pentland.**

Vick's Floral Premiums.

Mrs. Jos. Bradford, Columbus, best collection of cut flowers	**$20**
Mrs. P. J. Lofland, Columbus, second best collection of cut flowers	**10**
Jacob Cookson, Circleville, third best collection of cut flowers	**5**
Mrs. Ellen Smith, Cedarville, fourth best collection of cut flowers	**Floral chromo.**
Mrs. W. H. Ragan, Columbus, best ornamental floral work (either bouquet or floral ornament)	**$5**

***Awarding Committee.*—John Thorpe, Mrs. E. J. Blount, Jno. Underwood, J. L. Stelzig.**

Fine Arts—Drawings and Paintings.

E. F. Beckwith, Columbus, best life-size portrait in oil, from photograph and sitting.	**$10**
M. Armbruster, Columbus, best life-size photograph in India ink	**10**
M. Armbruster, Columbus, best photograph of infant, colored in oil	**Dip.**
" " " " colored in water colors	**Dip.**
E. F. Beckwith, best portrait of infant, from life, in oil	**$10**
H. M. Bainter, Westerville, best portrait in oil, of horse, bull, or cow, the entire animal and not head only	**15**
C. E. Cookman, Columbus, best specimen of painting in oil, by an Ohio artist.	**Dip. or 15**
E. F. Miller, Columbus, best specimen of painting in water colors	**10**
J. J. Barber, Columbus, best landscape from nature, in oil, by an Ohio artist	**5**
E. F. Miller, Columbus, best landscape from nature, in water colors	**10**
J. J. Barber, Columbus, best original poetical painting, by an Ohio artist	**10**
J. M. Bradford, Columbus, best specimen of not less than 12 different objects of natural history in oil, by an Ohio artist	**Dip. or 15**
C. E. Cookman, Columbus, best specimen of fruit or flower painting in oil	**Dip. or 10**
J. C. Williams, Columbus, best specimen of fruit or flower painting in water colors.	**5**
C. E. Cookman, Columbus, best specimen of Ohio lanscape in oil, by an Ohio artist	**Dip or 10**

J. J. Barber, Columbus, best exhibition of paintings in oil	$25
C. E. Cookman, Columbus, best fancy portrait in oil, by an Ohio artist	10
A. W. Okey, Columbus, best fancy painting in oil or water colors	10
J. McClenahan, Columbus, best specimen of penmanship	Dip.
" " best ornamental penmanship	Dip.
Jno. N. Piersche, Columbus, best crayon drawing	Dip.
Geo. W. Bittinger (for the artist), Plymouth, best pencil drawing	Dip.
M. A. Bridge, Columbus, best fancy sign painting	Dip.
S. R. Holt, Worthington, best bridge (model of)	Dip.
J. F. Harris, Columbus, best architectural drawings	$20
Olds & Kirby, Columbus, second best architectural drawings	10

Awarding Committee.—S. G. McBride, Frank Miller, C. H. Schulze.

Sculpture, etc.

Peter Koch, Columbus, best collection and greatest variety insects not previously exhibited, properly named and classified as destructive or beneficial	$25
Oliver Davie, Columbus, best collection and greatest variety of Ohio birds, prepared and not previously exhibited, properly named and classified as to foods—insectivorous, gramniverous, and omniverous	25

Awarding Committee.—J. M. Briggs, Will D. Heyl, A. J. Wilson.

Instruments—Philosophical, etc.

C. M. Evans, Cincinnati, best artificial limb	Dip.
Dr. T. H. Smith, Columbus, best specimen of dentistry	Dip.

Awarding Committee.—T. Jones, Jas. Letler, S. G. McBride.

Musical Instruments.

T. H. Schneider & Co., Columbus, best grand pianoforte	$50
" " best upright piano	25
" " best square piano	25
Jos. Harris, Columbus, best reed organ	Sil. med.
H. H. Heskett, Columbus, best violin	$5
W. H. Grubbs, Columbus, best guitar	5
T. H. Schneider & Co., Columbus, best flute	5
Jos. Harris, Columbus, best collection of musical instruments	Dip.

Awarding Committee.—David Staltre, Mrs. C. Smith, Marion; Miss A. A. Leonard, Columbus; H. Burkhard, Tiffin; Henry Weitzel.

Floral Premiums Extraordinary—Commercial List.

Wm. McKellar, Chillicothe, best collection cut flowers	$10
Morris Evans, Columbus, second best collection cut flower	6
Wm. McKellar, Chillicothe, best collection cut roses	5
J. J. Campbell, Columbus, second best collection cut roses	3
Wm. McKellar, Chillicothe, best collection cut dahliase	5
Morris Evans, Columbus, best collect cut verbenas	5
Wm. McKellar, Chillicothe, second best collection cut verbenas	3
Morris Evans, Columbus, best collection cut geraniums	5

Maggie Evans, Columbus, best display button-hole bouquets	$2
Wm. McKellar, Chillicothe, second best display button-hole bouquets	1
Maggie Evans, Columbus, best pair hand bouquets	5
J. J. Campbell, Columbus, second best pair hand bouquets	3
John Underwood, Columbus, best collection floral designs	25
Miss Clara McClelland, Columbus, second best collection floral designs	15
Maggie Evans, Columbus, best table design	15
John Underwood, Columbus, second best table design	10

Awarding Committee.—J. J. Janney, J. L. Stelzig, G. S. Innis.

Amateur List.

Mrs. N. E. Lovejoy, Columbus, best collection cut flowers	$8
Mrs. P. J. Lofland, Columbus, second best collection cut flowers	5
Mrs. Jos. Bradford, Columbus, third best collection cut flowers	3
Mrs. J. Zirkel, Columbus, best collection cut verbenas	3
Mrs. Jos. Bradford, Columbus, second best collection cut verbenas	2
“ “ best collection cut petunias	3
“ “ best collection of cut balsams	3
Mrs. E. K. Stewart, Columbus, best floral design suitable for dinner or drawing-room table	7
Mrs. P. J. Lofland, Columbus, second best floral design suitable for dinner or draw-room table	5
Mrs. N. E. Lovejoy, Columbus, third best floral design suitable for dinner or draw-room table	3

Awarding Committee.—John Thorpe, John Underwood, J. L. Stelzig.

COMMENDED LIST.

FIRST DEPARTMENT.

Charles Scarritt, Columbus, trio sumatra pheasants.
Henry C. Clark, Pittsfield, ferrets.
Wm. Laudenslager, Columbus, ferrets.

Examining Committee.—H. B. Morris, W. H. Jennings, S. L. Beeler.

SECOND DEPARTMENT.

A. W. Coates & Co., Alliance, horse hay rake (wheel.)
P. P. Mast & Co., Springfield, two-horse grain drill.
David Lawton, Racine, Wisconsin, hay and straw cutter, power and hand combined, with chaff carrier.
Buffalo Forge Co., Buffalo, New York, portable forges.
Wm. N. Thayer, Westerville, pneumatic middlings purifier.
Marsh & Rhodes, Urbana, lawn mower, I. X. L.
Eagle Machine Works, Bucyrus, rachet cider press screws.
Thos. B. Wiley, Lancaster, automatic gate.
John Burkholder, Centerburg, acme wheat steamer.
C. Aultman & Co., Canton, display of reapers and mowers.
Lieb & Gary, Columbus, flour mill.
“ “ mill stone proof for dressing mill stones.

Fisher & Tipton, Harrisonville, wool presser and tier.
Keystone Manufacturing Co., Sterling, Illinois, hay tedder.
F. D. Prouty, Columbus, 2 and 3-horse chilled plow.
G. R. Thompson, Quincy, Illinois, apple parer, corer, and divider.
Davidson & Rutledge, Ada, traction farm engine.
J. I. Case, Racine, Wisconsin, traction farm engine.
C. Fockler & Bro., Dubuque, Iowa, adjustable buggy tops.
Luckhaupt Brothers, Columbus, beer kegs.
Mast, Foos & Co., Springfield, lawn mower.

Your committee beg leave to report that the articles examined in this class possesses rare excellence and merit. Time only forbids special mention of each as they deserve.

Examining Committee.—Howard Linville, Thos. Hazard.

THIRD DEPARTMENT.

V. A. Koerner, Columbus, display brass faucets.
W. B. Tucker, Columbus, carriage wheels, hubs, etc.
Columbus Elbow Co., Columbus, stove pipe elbows.
P. Hayden & Son, Columbus, chains.
Chas. Hayden, Columbus, fire kindler.
L. C. Van Slyke, Columbus, scroll and fret work.
M. C. Wright & Brother, Columbus, sleigh runners for wheeled vehicles.
S. P. Miller & Son, Springfield, Miller's patent food preserver.
Revolving Scraper Co., Columbus, display of scrapers, plows, and wheelbarrows.
John Short, Columbus, combination wagon skein.
J. J. Voglesang, Columbus, school-room stove.
" " pedestal register.
" " self-indicating register.
J. B. Howe, general agent, Jackson, display of sewing machines and hand and foot attachments.
N. A. Soggs, Columbus, Pennsylvania, fruit and vegetable parer, corer, and slicer.
J. W. & C. F. Reed, De Graff, hog trap and holder.
Hildreth, Martin & Co., Columbus, display of mill work.
W. B. Tucker, Columbus, Hendry's patent axle.
N. A. Wells, Columbus, sewing machine (Domestic).
J. J. Watrons, Cincinnati, scroll saws.
S. M. Oldham, Reynoldsburg, bee-hive, with honey.
" " bee smoker.
Joshua Donnerd, Zanesville, molding-sand.
S. B. Steward, Urbana, dumping wagon for coal or brick.
Patterson & Peppler, Columbus, hitching post.
Fisher & Hannawalt, Columbus, burial caskets (workmanship commended).
N. S. Long, Marysville, butter press.
E. T. Rawson, Columbus, carpet sweeper.
John H. Thomas & Sons, Springfield, hay tedder.
Louis Link, Columbus, undertakers' hardware.
" " shroud.
Morris & Slauser, Larne, model for frame house.
Columbus Sewer Pipe Co., Columbus, display of sewer pipe.

Burden Lock Link Co., Paris, Kentucky, lock links.
Ohio Buggy Co., Columbus, lady's phæton.
" " triple spring buggy.
" " farmers' buggy.
" " gents' driving wagon.
" " Brewster wagon.
" " unpainted wagon.
John Patterson, Columbus, hand lawn mower.
J. S. Wilson, Indianapolis, Indiana, fly and insect screen.

Examining Committee.—E. W. Wines, W. T. Rees, G. S. Innis.

FOURTH DEPARTMENT.

John Rickers, Sandusky, sofa.
W. G. Dunn & Co., Columbus, display of carpets.
Kershaw, Krauss & Putnam, Columbus, display of carpets.
Freeman, Staley & Morton, Columbus, display of carpets.
J. M. Montgomery, Jr., Columbus, folding bed-stead.
" " child's bedstead.
M. C. Lilley & Co., Columbus, display of regalias, lodge, and military supplies.
W. D. Freeman, Columbus, flavoring extracts and perfumery.
Wm. Kurtz, Columbus, Maris' patent breast collar for horses.
George E. Moore, Columbus, Moore's champion plaiter.
John Rickers, Sandusky, arm chair.
C. Seibert, Columbus, guns, pistols, and fishing tackle.
Clarence Waring, Columbus, doll's bedstead.
Mora Ford, Columbus, cross on perforated paper.
Miss Carrie Martin, Columbus, match-safe on card-board.
" " cigar case on card-board.
Miss Flora Martin, Columbus, frames on card-board.
Mary Speaks, Columbus, lady's lace cap.
Miss Carrie Martin, Columbus, pin-cushion.
Mrs. E. Frankenberg, Columbus, pair of knit gloves.
Miss Carrie Goetz, Columbus, crochet baskets.
Miss Ida Barker, Columbus, pair of ladies' kid gloves, made by exhibiter.
" " pair of gent's kid gloves, made by exhibiter.
" " handkerchief and glove box.
Miss Mary Zuck, Columbus, chair tidies on canvas.
Henry Lowry, Columbus, specimen of hand carving.
Miss Jennie Slee, Columbus, air castles (paper).
Auchincloss Bros., New York, J. & P. Coats' spool cotton.
R. W. Linen, Columbus, display of furnishing goods.
A. Landauer & Sons, Columbus, gent's overcoat.
E. O. Randall & Co., Columbus, perforated wrapping paper and cabinets.
E. O. Randall & Co., Columbus, fancy screen.
Halm, Bellows & Butler, Columbus, parlor inlaid table.

Examining Committee.—C. P. L. Butler, John W. Lilley, Louis E. Loechler.

FIFTH DEPARTMENT.

J. T. Corbin, Dublin, sack of corn flour.
David Williams, Columbus, display of potatoes.
P. K. Dederick, Albany, New York, patent bale of hay.
J. B. Stewart, Flint, timothy hay.
Frank Ford, Ravenna, sample of tomatoes (Alpha).

Examining Committee.—John Montgomery, Granville; S. R. Moore, West Zanesville; G. H. Lattimer, Hilliard.

request of the members in charge, we, the undersigned, have examined a lot of Higgins's Eureka salt, exhibited by George Bobb, agent, of Columbus, and recommend for him a diploma.

Special Committee.—D. A. Williams, L. L. Pope, G. H. Lattimer.

SIXTH DEPARTMENT.

Mrs. Dr. Breyfogle, San Jose, California, collection of prepared ferns.
Barrow & Co., Columbus, revolving business directory.
Albert Baker, Columbus, two stalks of growing cotton.
Clark White, Columbus, enlarged colored photograph.
Grant Rogers, Columbus, display of minerals.
L. A. Beauman, Columbus, photo-chromo.
" " imitation of painting.
Miss Alma Leonard, Columbus, collection of pastil paintings.
Alfred Hanford, Columbus, collection of butterflies.
Mrs. H. H. Peters, Columbus, medley pictures.
E. F. Beckwith, Columbus, painting of Pope Pius IX.
" " marine painting.
E. W. Blake, Columbus, oil painting.

Examining Committee.—J. M. Briggs, Will D. Heyl, A. J. Wilson.

REPORTS OF THE SPECIAL COMMITTEES ON LIVE STOCK.

REPORT UPON THE HORSE EXHIBIT—BY L. G. DELANO.

To the State Board of Agriculture:

As secretary of your Committee of Awards on Horses, I have endeavored to give an accurate description of each animal entered for a prize. The descriptions, with age, weight, girth, height, pedigree, name of owner and breeder, have been recorded and placed in the office of the Board for reference. The total number of entries made in this department were two hundred and eighty-two, classed as follows: Thoroughbreds, 16; Roadsters, 43; General Purpose, 40; Draft, 50; Light Harness, 16; Saddle, 8; Matched Teams, 12; Trotters and Pacers, 53; Runners, 9; Sweepstake Draft, 14; Sweepstake Thoroughbred and Roadsters, 13; Jacks and Mules, 8.

THOROUGHBREDS.

Stallions four years old and over.—In this class there were four entries, aged from five to seventeen years; their average height 16½ hands, girth 6 feet 4 inches, and weight 1,080 pounds. The first premium was awarded Enterprise, a bay stallion, owned and bred by O. P. Chaney, Canal Winchester, Ohio. He was foaled April, 1871; sired by imported Hurrah; first dam Emily Peyton, by Lexington. He is sixteen hands high, girth six feet three inches, and weighed eleven hundred and twenty pounds. He has fine style, a good body, muscle and bone.

The second premium was awarded to Bastion, a dark chestnut stallion, bred by L. J. Polk, of Tennessee; owned by Mahoy & Greenless, South Solon, Ohio; was foaled in 1861, sired by Commodore, by Boston, first dam by imported Ambassador. He is fifteen and one-half hands high, girth six feet and eight inches, and weighs twelve hundred and fifty pounds. His style is attractive, he has a good body, short, strong legs, and is well muscled.

Stallions three years old.—There were two entries in this class. The first premium was awarded Jack, a bay, foaled May, 1875, bred and owned by O. P. Chaney, Canal Winchester, Ohio; sired by imported Hurrah, first dam Linda Peyton, by Ringmaster, second dam Emily Peyton, by Lexington. He is fifteen hands two inches high, stylish, well muscled, with good legs and body.

The second premium was awarded Oriole, a chestnut stallion, bred by Newton Shelby, Fayette county, Ohio, owned by Mahoy & Bros., South Solon, Ohio; foaled in 1875, sired by Bastion, first dam by Baywood, second dam by War Dance. He stands fifteen hands one inch high, girth five feet eight inches, and weighs eight hundred and five pounds.

Stallions two years old.—The only entry in this class was Correlia, bred and owned by John Reber, of Lancaster. He was awarded the first premium. He is an extra stylish chestnut stallion; form, muscle, and bone all good. Sired by imported Hurrah, first dam Bonnie Kate by imported Scotland, second dam Young Fashion by imported Monarch.

Stallions one year old.—But one entry in this class. The first premium was awarded to Charley, a brown colt one year old, bred and owned by Mahoy & Brother, South Solon, Ohio. He is stylish and handsome, weighs 785 pounds, is well muscled, has good legs and bone; was sired by Bastion, first dam by Baywood. He is full brother to Oriole, winner of the second premium in the three-year-old stallion class.

Mares four years old and over.—In this class there were four entries, aged from four to seven years, their average height fifteen hands three inches, girth five feet eight and one-half inches, and weight 796 pounds—all in their racing form except one. The first premium was awarded to Maggie Shields, bred by William Shields, of Newark, Ohio, owned by H. J. Bidleman, Columbus, Ohio. She was foaled in 1873, sired by Woodstock, by imported Australian; first dam Nellie Boston, by Frank Boston, by Lexington. She is a chestnut, fifteen hands two inches high, weighs 825 pounds in racing form, and girth five feet eight inches. She has fine style, good body, legs, muscle, and bone.

The second premium was awarded to Bertie May, a bay filly four years old, bred by T. O'Bannon, of Newark, Ohio, owned by P. A. Graves, of Hartford, Ohio; sired by Woodstock, by imported Australian, first dam Waxy, by imported Cruiser, second dam Buckeye Lass, by Admiral. She is fifteen hands two inches high, weighs eight hundred pounds in her racing form, and girths five feet seven inches.

Mares three years old.—The first premium was awarded to the only entry in this class, Lady Middleton, a bay bred and owned by John Reber, of Lancaster, Ohio; sired by imported Hurrah, dam Lady Lancaster, by imported Monarch. The dam of this filly has produced some of the most noted race horses of the day, among which were Malcolm, Ontario, Lady Fairfield, and others. Lady Middleton measured in racing condition fifteen hands high, girths five feet nine inches, and weighs nine hundred pounds. Her form is nearly perfect, muscle and bone good. She exhibited a high rate of speed.

Mares two years old.— The only entry in this class was awarded the first premium, Lady

Bastion, a chestnut filly, bred and owned by Mahoy & Bros., South Solon, Ohio. She is fifteen hands high, five feet ten inches girth, and weighs eight hundred and sixty pounds; sired by Bastion, first dam by Baywood, and is full sister to Oriole and Charley; style, bone, legs, muscle, body, and action all very good.

One year old fillies.—One entry. The first premium was awarded Louise Gwynne, a bay filly bred by the late Baldwin Gwynne, of Columbus, owned by Henry Taylor, Columbus. She is exceedingly well bred; sired by imported Hurrah, first dam Nellie Gwynne, by Bonnie Scotland, second dam Gray Alice, by Chorister, third dam Alice Carneal (Lexington dam). She is fifteen hands high, five feet seven inches girth, and weighs eight hundred pounds; has fair style, a good body, with excellent legs.

BROOD MARES WITH FOAL BY SIDE.

One entry in this class, and the first premium was awarded Reseda, with colt at her side; sired by Enterprise. She is a bay mare bred by Wm. M. Anderson, of Circleville, Ohio, owned by O. P. Chaney, Canal Winchester, Ohio, fifteen hands high, compactly built, bone rather light; sired by Revolver, by Reveum; first dam Crescutine, by Vandal.

ROADSTER STALLIONS.

Four years old and over.—There were ten entries in this class, aged from five to eleven years. Their average height was fifteen hands three inches, average girth six feet, and average weight thirteen hundred and ten pounds. The first prize was awarded the chestnut stallion Mohawk Chief, bred by Mr. Simmons, of Granville, Ohio, owned by W. B. Hall & Co., Shaler's Mills, Ohio; foaled in 1870, got by Hall's Mohawk, dam by Green Mountain Morgan. He has good style, a flat leg, with plenty of bone and muscle, a round body, and a trotting record of 2:30.

The second premium was awarded White Foot, a chestnut stallion, bred and owned by the St. Joseph's Institute, Somerset, Ohio. He was foaled in 1872, sired by Ringgold, first dam by Blood's Black Hawk, second dam by Edwin Forrest. He is fifteen hands three inches high; style, action, bone, muscle, and form all good.

Stallions three years old.—In this class there were five entries, their average height fifteen hands, girth five feet six inches, weight nine hundred and ten pounds. The first premium was awarded "Frank," a bay stallion, bred and owned by Charles Pratt, South Charleston, Ohio, sired by Clark's Mohawk, Jr., dam by Flying Morgan. He is fifteen hands three inches high, girth five feet ten inches, and weighs nine hundred and sixty-five pounds; style and form good, strong legs, well muscled, and trots in about three minutes.

The second premium was awarded "George," a brown stallion bred and owned by O. P. Chaney, Canal Winchester, Ohio; sired by Mambrino Tranby; first dam by Champion Searcher; he is fifteen and one half hands high; girth five feet six inches, and weighs eight hundred and sixty pounds; fair style, good body, legs, and action; trots in about three and one-half minutes.

Stallions two years old.—The exhibition in this class was excellent: nine entries; their average height fifteen hands three inches; girth five feet seven inches, and weight eight hundred and seventy pounds. The first prize was awarded to Baker Pasha; bred by Wm. Carson, Chillicothe, Ohio, and owned by Dr. Grace, of Chillicothe. He is a bay stallion fifteen hands high; girth five feet nine inches, and weighs nine hundred pounds; has excellent legs, feet, bone, and muscle; very fine style and action; can trot in three minutes; got by Mambrino Beave, by Mambrino Chief; first dam Lucy Wilson, by Mambrino, by Mambrino Chief.

The second premium was awarded Robert Burns, a black stallion owned and bred by William Burns, Springfield, Ohio. Sired by Hailstorm, by Mambrino Patchen; first dam by Flying Cloud. He is fifteen hands high; has excellent action; trots fast, fine style, and good legs and body.

ROADSTER MARES.

Four years old and over.—Seven entries in this class, their average height fifteen and one-half hands, girth five feet ten inches, and weight nine hundred and seventy pounds. The first premium was awarded the bay mare Fashion, bred and owned by Wm. M. Yeazel, Springfield, Ohio; foaled in 1873; sired by Clark's Mohawk, Jr.; first dam a Mambrino and Clay mare. She is remarkably stylish and attractive, fifteen and one-half hands high, weighs nine hundred and fifty pounds, has good limbs, round body, and trots in 2:30. The second prize was awarded Flora Clay, a black mare, bred by Jacob Dubois, of Ross county, Ohio, owned by Geo. D. Chapman, Columbus, Ohio; was foaled in 1869; got by C. M. Clay, Jr.; first dam unknown. She is fifteen and one-half hands high, girth five feet eight inches, and weighs nine hundred and ninety pounds. Body, legs, muscle, style, and general appearance excellent; trots better than 2:40.

Mares three years old.—Four entries, their average height fifteen hands three inches, girth five feet ten inches, and weight one thousand and twenty-five pounds. The first premium was awarded Jessie, a brown filly, bred and owned by James Clark, New Moorfield, Ohio; sired by Clark's Mohawk, Jr.; dam unknown. Height sixteen hands, girth six feet, and weight eleven hundred pounds. She is a remarkably stout filly, well muscled, with good style and action. The second premium was awarded Dollie, a bay filly bred by John Stimmel, Columbus, Ohio, owned by Charles Talbot, Columbus, Ohio; sired by Hall's Mohawk, dam by a Bellfounder horse. She is fifteen hands three inches high, girth five feet eight inches, and weighs nine hundred and fifty pounds. Her action, style, form, and general appearance are all good.

Mares two years old.—One entry; the committee awarded the second premium to Lady Kerns, bred and owned by D. S. Elliott, Alton, Ohio, a brown filly sired by a second Hurrah, dam unknown. Light bone and body, poor action, style, and speed

FILLIES.

One year old.—One entry in this class. The first premium was awarded a filly bred and owned by A. H. Foster, Alexandria, Ohio; sired by Erie Abdallah, dam by Pilot. She is fifteen hands high, girth five feet five inches, and weighs eight hundred and ninety-five pounds. Her bone, body, style, and action are all good.

Brood mares, with foal by side.—There were two entries in this class, only one considered worthy of a premium. The first premium was awarded Abdalline, seven years old, bred by A. Foxworth, owned by G. W. Kenan, Upper Sandusky, Ohio; sired by Pacing Abdallah, by Alexander's Abdallah, first dam by Cockspur. Her foal was by Sterling Revolver. She is fifteen hands three inches high, girth six feet five inches, and weighs eleven hundred and forty pounds. Shows fine action and style. Bone, muscle, and body good.

GENERAL PURPOSE STALLIONS.

Four years old and over.—There were twelve entries in this class, ten of which were exceedingly well-bred roadsters, and two as well-bred saddle horses. Their ages were from four to eighteen years, their average height fifteen hands three and three-quarters inches, girth six feet one and one-half inches, and weight eleven hundred and forty-five pounds. The first premium was awarded Mambrino Tranby, a black stallion nine years old, bred by Dr. Herr, Lexington, Kentucky, and owned by O. P. Chaney, Canal Winchester, Ohio; sired by Mambrino Patchen (full brother of Lady Thorn), first dam a thoroughbred mare by Mahomet. He is fifteen hands two inches high, girth six feet three inches, and weighs eleven hundred and sixty-five pounds. His legs are short, strong, and well muscled; good style, and can trot in three minutes. The second premium was awarded Abdallah, Jr., a bay stallion eight years old, bred and owned by S. J. Truesdale, Chesterville, Ohio. He is a high-bred roadster, sired by Erie Abdallah, first dam by Old Mohawk, sire of Clark's Mohawk, Jr., and Hall's Mohawk. His height is fifteen hands three inches, girth six feet two inches, and weight eleven hundred and forty pounds. Style good; legs short and strong, with plenty of bone and muscle; a round, long body, good action, and can trot in 2:40 or better.

Stallions three years old.—In this class there were eight entries, breed as follows: Five roadsters, two draft and roadster, and one draft. Their average height was fifteen hands three inches, girth six feet one inch, and weight eleven hundred and thirty-five pounds. The first prize was awarded John Gilpin, a bay stallion, bred and owned by R. C. Stewart, Seven Mile, Ohio; sired by Strader's C. M. Clay, Jr., first dam by Indian Chief, by Blood Chief. He is fifteen hands three inches high, bone rather slight for this class, legs good, but long, body very good; excellent style and good action. The second premium was awarded Dexter, a black stallion, bred and owned by J. A. Greene, Columbus, Ohio, sired by a Morgan horse out of a well-bred mare of Gray Eagle stock. He is fifteen hands two inches high girth, six feet one inch, and weighs one thousand and seventy pounds; good, strong, short legs rather light muscle, and a good body; his style and general appearance not attractive; shows good trotting action.

Stallions two years old.—The first prize was awarded the only entry in the class—Abdallah, owned and bred by J. B. Stewart, Flint, Ohio; sired by Erie Abdallah: dam by a Bellfounder horse; his body, legs, style, and action all good.

GENERAL PURPOSE MARES.

Four years old and over.—There were nine entries in this class, from five to nine years old, of the following strains: Roadsters, five; draft, one; draft and Canadian, one; unknown, two. Their average height was fifteen hands three and one-third inches; girth six feet two and two-thirds inches, and weight eleven hundred and eighty pounds. The first premium was awarded the bay mare Jennie, seven years old, bred by Mr. Howard, of Cynthiana, Kentucky, and owned by R. C. Stewart, Seven Mile, Ohio, sired by Indian Chief, first dam Bertram and Copper Bottom stock. She stands sixteen hands high, fine style, round, long body, clean limb, bone and muscle most too small and light for this class; action very good. The second premium was awarded the gray mare Queen, eight years old, bred by Joshua Showers, Marion, Ohio, owned by N. M. Runyan, same place, sired by Lewis' Bellfounder, dam by Eclipse 3d; clean, strong legs, good bone, muscle, and body; style ordinary, action good; trots in 2:40.

Mares three years old.—Four entries in this class, of the following breeds: Thoroughbred, one; roadster, two; draft, one; their average height fifteen hands three and one-half inches, girth six feet two inches, and weight eleven hundred and seventy pounds. Their quality and classifications were so poor that the committee awarded but one premium. The first premium was awarded to a bay filly, bred and owned by O. P. Chaney, Canal Winchester, Ohio, sired by Mambrino Tranby, first dam unknown. She is fifteen hands three inches high, girth six feet three inches, and weighs twelve hundred and five pounds. Her bone, muscles, body, and general appearance are all very good.

Fillies two years old.—Three entries in this class, of the following breeds: Thoroughbred, one; draft, one; roadster, one; average height fourteen hands three inches, girth five feet eight and one-third inches, and weight nine hundred and twenty pounds. The first premium was awarded Lady Riley, a chestnut, bred and owned by James Riley, Hebron, Kentucky, sired by Graves' Abdallah, first dam by Tom Crowder. She is fifteen hands high, good form, bone, and action; muscle light for the class, and ordinary style. The second premium was awarded a chestnut filly, Queen, bred and owned by Mahoy Brothers, South Solon, Ohio, sired by Bastion, dam a thoroughbred mare by Baywood. She is fourteen hands two inches high, girth five feet five inches, and weighs eight hundred and ten pounds; clean limbs, good body, light muscle, a thoroughbred appearance, and belongs in that class.

Brood mare with foal by side.—There were three entries, two of which were excluded, one belonging to R. C. Stewart, received a premium for four year old mare and was excluded under the rule that a mare can be exhibited only in one class and for sweepstakes. The mare belonging to A. H. Foster, Alexandria, Ohio, excluded on account of her colt being over a year old. The committee awarded the second premium only, and that to a bay mare ten years old, Petty Boon, bred and owned by B. S. Elliott, Alton, Ohio; got by a Canadian horse, dam unknown; colt by her side weight 475 pounds, and was sired by a quarter-bred Belgium stallion. She is fifteen hands one inch high, girth six feet three inches, and weighs eleven hundred and fifty pounds; a short, round body, with good muscle, but very ordinary style.

DRAFT STALLIONS.

Four years old and over.—There were ten entries in this class, seven of which were imported; aged from four to nine years; average height sixteen hands and two inches; girth six feet nine inches, and weight fifteen hundred and seventy-five pounds. The first premium was awarded the brown Clydesdale stallion Sir Robert Bruce, bred in Scotland, imported by John Reber, of Lancaster, Ohio, owned by Messrs. Taylor & Jones, Plain City, Ohio. He is nine years old, sixteen hands three inches high, girth six feet ten inches, and weighs sixteen hundred and fifty pounds. His bone and muscle are exceedingly strong and well developed, a splendid back and body, legs short, very stout and clean, with good feet and fine action. The second premium was awarded to the bay stallion George, four years old, bred and owned by James T. Miller, Marble Cliffs, Franklin county, Ohio, sired by imported Belgium, first dam by Old Valley Bill; second dam unknown. He is sixteen and one-half hands high, girth six feet five inches, and weighs sixteen hundred and seventy-five pounds; legs and bone light for weight of body; muscle good; style and appearance good.

Stallions three years old.—There were three entries, all natives, their average height sixteen hands and two and one-third inches, girth six feet nine inches, weight fifteen hundred and eighty pounds. The first prize was awarded a grey stallion, bred and owned by David Postle, Camp Chase, Ohio. Sired by imported Belgium; first dam a half-bred Norman, by Old Valley Bill. He is sixteen hands and two inches high, girth six feet eight inches, and weighs fifteen hundred and seventy pounds. Bone and muscle good, with excellent legs and feet. The second premium was awarded the bay stallion Belgium, Jr., bred and owned by David McClurg, Plain City, Ohio. Sired by imported Belgium; first dam a three-quarter bred draft mare. He is fifteen hands three inches high, girth seven feet, and weighs sixteen hundred pounds; bone, muscle, body, legs, style, and action all very good.

Stallions two years old.—Two entries. The first prize was awarded Crown Prince, Jr., a bay, bred and owned by Wm. Emerson, Fredericktown. He is sixteen hands and one inch high, girth six feet seven inches, and weighs fourteen hundred and forty pounds; excellent legs and feet, heavy body, strong bone and muscle; style and action good; sired by imported Crown Prince; dam, a quarter Norman. The second premium was awarded Billy, a bay, bred and owned by Levi Kidder, Woodstock, Ohio. Sired by the Clyde stallion imported Prince Alfred; dam by the imported draft stallion Niger; second dam a quarter-bred draft mare. He is fifteen hands one inch high, girth six feet four inches, and weighs twelve hundred and forty pounds; strong, clean limbs, good bone, muscle, and style.

Stallions one year old.—Four entries. Average height fifteen hands, girth six feet, and weight eleven hundred pounds. First premium awarded to a bay, bred and owned by David Bulliard, Fredericktown, Ohio. Sired by imported Crown Prince; dam unknown; he is fifteen hands two inches high, girth six feet one inch, and weighs eleven hundred and fifty pounds; excellent legs and body, good style, and fair action. The second premium was awarded a brown colt, Prince, Jr., bred and owned by Daniel Vernon, Fredericktown, Ohio. Sired by imported Crown Prince; dam, a half Norman mare, by imported Bob. He is fifteen hands high, girth six feet, and weighs eleven hundred and ninety-five pounds; has good legs, feet, and body; style and action very fine.

DRAFT MARES.

Mares four years old and over.—There were four entries in this class. Their average height was sixteen hands one inch, girth six feet eleven inches, and weight fifteen hundred and seventy pounds. The first prize was awarded the brown mare Belle, bred and owned by James T. Miller, Marble Cliffs, Ohio. Sired by imported Belgium; dam, a half-bred Clyde mare. She is a mare of fine size and good muscular development. The second premium was awarded Lady Belgium, a grey mare bred and owned by B. F. Elliott, Alton, Ohio. Sired by imported Belgium; first dam of unknown blood. She is six years old, fifteen hands three inches high, bone, muscle, body and style all good· Two very excellent mares entered in this class (one by W. J. Harbert, Ostrander, Ohio, and one by C. A. McMullen, of Milford Centre), arrived to late to exhibit. Mr. Harbert's mare afterwards received first prize in draft sweepstakes.

Mares three years old.—There were seven entries. The average height was sixteen hands, girth six feet eight inches, and weight fourteen hundred and fifty pounds. The first prize was awarded the roan filly Kate, bred by James Fullington, Irwin Station, Ohio, and owned by C. A. McMullen, Milford Centre, Ohio. Sired by imported Prince Imperial; first dam by imported Doc. (the Baker horse); second dam by imported Louis Napoleon; third dam a well breed mare. She is sixteen hands two inches high, girth seven feet one inch, and weighs fifteen hundred and thirty-five pounds; has short, strong legs, heavy body, good bone, style, and action. The second prize was awarded Nellie Clyde, a black filly, bred and owned by James McCloud, Plain City, Ohio. Sired by imported Sir Robert Bruce; dam, a half-bred Norman mare by Old Valley Bill. She is sixteen hands one inch high, girth six feet ten inches, and weighs fifteen hundred and forty-five pounds; bone, legs and feet excellent; style and action only fair.

Two-year old mares.—There were seven entries. Their average height fifteen hands two inches, girth six feet seven inches, and weight thirteen hundred and seventy-five pounds. The first premium was awarded a bay mare owned and bred by Samuel Taylor, Plain

City; Ohio, sired by imported Sir Robert Bruce; dam a half bred mare by imported Belgium, she is fifteen hands two inches high, girth six feet seven inches, and weighs thirteen hundred and fifty pounds. Good bone and muscle; legs and body extra good, style and action fair. The second premium was awarded Jane, a brown filly, bred and owned by Dow Martin, Woodstock, Ohio, sired by the imported French stallion Charley, dam a half-bred Norman, by Old Valley Bill. She is fifteen hands two inches high, girth six feet seven inches, and weighs thirteen hundred and sixty pounds; has a round strong body, flat leg, and good style.

One-year old filly.—There were four entries. Their average height fifteen hands, girth five feet eleven inches, and weight nine hundred and eighty pounds. The first premium was awarded Lady, a bay, bred and owned by Wm. Emerson, Fredericktown, Ohio, got by imported Crown Prince, dam a quarter bred Norman mare. She is fifteen hands one inch high, girth six feet one inch, and weighs one thousand and seventy-five pounds. The other entries were considered unworthy of any premium by the judges.

Brood mares with foal by side.—There were seven entries. Their average height sixteen hands, girth six feet five and one-half inches, and weight thirteen hundred and ninety pounds. The first prize was awarded Queen, a bay mare eight years old, bred and owned by Geo. W. Handley, Richwood, Ohio, sired by the imported French horse Bay Duke, dam by Kentucky Whip. Her colt weighed six hundred and sixty-five pounds, and was sired by the French horse imported Contract. Queen is fifteen hands three inches high, girth six feet four inches, and weighs fourteen hundred and seventy-five pounds: has a good strong limb and round body. The second premium was awarded Fannie, a bay mare four years old bred and owned by John Major, West Jefferson, Ohio, sired by imported Sir Robert Bruce, dam of Norman and Bellfounder stock. The colt is by the imported Clydesdale stallion Blithe Boy, and weighs six hundred and twenty pounds. Fannie is sixteen and one-half hands high, girth six feet seven inches, and weighs fourteen hundred and eighty-five pounds; legs, feet, and body good.

GELDINGS AND MARES FOR LIGHT HARNESS.

Four years old and over.—The exhibition in this class was very good. There were thirteen entries, aged from four to ten years. Their average height was fifteen hands two inches, girth five feet eleven inches, and weight nine hundred and eighty pounds. The first prize was awarded Eagle Plume, a gray gelding four year old, bred and owned by C. M. Bosworth, Wilmington, Ohio, sired by Bayard by Pilot, Jr., first dam of Black Hawk, Morgan breed. He is fifteen hands three inces high, girth six feet three inches, and weighs one thousand and ten pounds. His body and style are good, bone, legs, and muscle light, action and speed excellent, trots in two-thirty. The second prize was awarded Lady Richmond, bred by J. C. Simpson, of California, owned by John Reber, Lancaster, Ohio, sired by the trotting stallion Alf. Richmond, dam, Columbia, by Imp. Bonnie Scotland. She is a brown filly four years old, fifteen hands three inches high, girth five feet six inches, and weighs nine hundred and seventy-five pounds; legs clean and good, bone, body and style excellent, action very fine, trots in three minutes.

Mares and geldings three years old.—Three entries in this class. Their average height fifteen hands three inches, girth five feet ten inches, and weight nine hundred and seventy pounds. The first premium was awarded Dollie, a bay filly, bred by John Stimmel, of Columbus, and owned by Charles Talbot, of Columbus, Ohio. This filly was awarded the second prize in the roadster class, for fillies three years old, where a full description may be found. The second prize was awarded Buckeye Boy, a brown gelding, bred and owned by Christ. Hempy, Lancaster, Ohio. He is sixteen hands high. girth six feet, and weighs one thousand and thirty-five pounds. He has extra fine style, good body, legs, and feet, and fine action; sired by imported Hurrah, dam by White Hall. There were no entries of two-year old mares and geldings for light harness.

SADDLE HORSES.

Horse, mare, or gelding for saddle.—Eight entries, four of which were stallions, two mares, and two geldings, aged from four to ten years. Their average height fifteen hands two inches, girth six feet one and one-half inches, and weight nine hundred and eighty-five pounds. The first prize was awarded Hedgeford, a brown stallion nine years old, owned by Riddle & Norris, Petersburg, Kentucky. He is fifteen hands three inches high, girth six feet two inches. He is strong made, has good legs and body, is very stylish and attractive, only fair action, but exceedingiy well broken to all saddle gaits, and racks fast. The second prize was awarded Bruce, a bay stallion ten years old, bred by R. A. Alexander, of Kentucky, owned by Ed. Van Meter, Pickaway county, Ohio, sired by Edwin Forrest, first dam Maria, by Ward's Black Hawk. He is a very stylish horse, sixteen hands high, excellent legs, fine action, and well broken to all saddle gaits, trots or racks either, better than three minutes.

MATCHED HORSES AND MARES.

Pair of coach geldings or mares.—Two entries in this class, and but one considered worthy of any prize. The second prize was awarded A. R. Critchfield, of Howard, Ohio, for pair of bay geldings, "George" and "Sam," sixteen hands high, girth six feet three inches and six feet one inch, and weight eleven hundred and thirty-five and eleven hundred and five pounds; style and action ordinary.

FARM OR DRAFT GELDINGS OR MARES.

There were five entries. All of the animals of this class were extra good. Their average height fifteen hands three inches, girth six feet three and one-half inches, and weight twelve hundred and seventy pounds. The first prize was awarded a pair of gray mares, "Fancy" and "Lucy," five years old, bred and owned by J. F. Handley, Reynoldsburg, Ohio; sired by the French stallion "Imported Contract;" their height was fifteen hands one inch and fifteen hands three inches; girth, six feet four inches and six feet three inches; weight, thirteen hundred and five and twelve hundred and seventy pounds; form, bone, muscle, style, and action all good. The second prize was awarded to a pair of roan geldings, "George" and "Tom," owned and bred by D. S. Elliott, Alton, Ohio. They are full brothers, sired by a stallion got by Imported "Old Valley Bill"; their dam a Canadian mare. They are four and five years old, fifteen hands one inch and fifteen hands three inches high, girth six feet two inches and six feet four inches, and weigh eleven hundred and eighty-five and twelve hundred and seventy pounds; bone, muscle, legs, style, and action very good.

GELDINGS AND MARES FOR LIGHT HARNESS.

In this class there were five entries, aged from four to nine years. Their average height sixteen hands, girth five feet five inches, and weight nine hundred and twenty pounds. The first premium was awarded to a pair of black mares, "Flora Clay" and "Queen of Sheba"—Flora bred by Jacob Dubois, of Ross county, Ohio, and Queen of

Sheba, by O. B. Gould, of Franklin Furnace, Scioto county, Ohio; owned by G. D. Chapman, Columbus, Ohio. Flora is eight years old, fifteen hands two inches high, girth five feet eight inches, and weighs nine hundred and eighty-five pounds; sired by C. M. Clay, Jr.; dam, unknown. Queen is seven years old, fifteen hands three inches high, girth five feet ten inches, and weighs one thousand pounds; sired by Spaulding's Abdallah; dam by C. M. Clay, Jr. They make a very attractive team; sound, clean limbs, good body, extra style and action; can trot in 2:40. The second premium was awarded a pair of chestnut mares, "Kate" and "Minnie"; bred by Chappellear and Lake; owned by H. C. Chappellear, Hopewell, Ohio; sired by Black Hawk Telegraph. They are eight years old, fifteen hands and fifteen hands one inch high, girth six feet one inch, and weigh one thousand and thirty-five pounds. They are well formed; have good legs, style, and action.

TROTTERS.

Trotting stallions that have made a season for mares during the Spring of 1878, *and owned in Ohio.*—There were four entries. The race was mile heats, three in five, and resulted as follows: Mohawk Chief first in each heat; Mohawk Jackson second in each heat; Magic third in each heat; Banker distanced in the first heat. The time made was—first heat two thirty-four and one-half, second heat two thirty-two and one-quarter, and third heat two thirty-five. The track was wet and deep in mud. The first prize was awarded Mohawk Chief, a chestnut stallion, eight years old, bred by Mr. Simmons, of Granville, Ohio; owned by W. B. Hall, Shaler's Mills. He is sixteen hands high, has good bone, body, and style, and a record of two thirty. He was sired by Hall's Mohawk; dam by Green Mountain Morgan. The second prize was awarded Mohawk Jackson, a bay stallion, six years old, bred and owned by John Lee Paste, Galion, Ohio. He is sixteen hands high, girth five feet ten inches, and weighs eleven hundred pounds; has good legs, body, and style; his record is two thirty seven and one-half; was sired by Old Mohawk; dam, a Bashaw mare. The third prize was awarded Magic, a brown stallion, eleven years old, bred by Mr. Peters, of Kentucky; owned by William McCloy, Wilmington, Ohio; sired by American Clay, by C. M. Clay, Jr.; first dam by Burkley's Ed. Forrest. He is sixteen hands high and has a record of two thirty-three.

Running mile heats, two best in three.—There were six enties in this class. The track was very heavy, the rain falling during the race. The first heat was won by Lady Middleton in one forty-seven; the second and third heats were taken by Index, in one fifty and one fifty-two. The first premium was awarded the chestnut gelding, Index, three years old, bred by D. J. Crouse, Ross county, Ohio; owned by L. G Delano, Chillicothe, Ohio; he was sired by Chillicothe by Lexington; first dam Margin by Revolver, second dam Kinnickinnick by Ringgold. He is fifteen hands three inches high; has good bone, muscle, and style. The second promium was awarded Lady Middleton, a bay filly, three years old, owned and bred by John Reber, Lancaster, Ohio; sired by Imported Hurrah; dam Lady Lancaster by Imported Monarch. (See full description of Lady Middleton in thoroughbred class, mares three years old.) The third premium was awarded Frank Boston, a chestnut stallion, bred and owned by Armstrong and Smith, Mt. Vernon, Ohio; he is nine years old, fifteen and one-half hands high, girth six feet ten inches, and weighs, in racing condition, nine hundred pounds. Pedigree not ascertained.

Trotting horse, mare, or gelding, not over four years old.—There were five entries in this class. The race was mile heats, two best in three. The first heat was taken by Lady Clark in two forty-seven; Delaware Maid second, Lady Richmond third, Frolic fourth, Claudine distanced. The second heat was taken by Lady Clark in two forty-nine; Lady Richmond second, Delaware Maid third, Frolic fourth. The first prize was awarded Lady Clark, a roan filly, bred and owned by J. D. Clark, Springfield, Ohio. She was sired by Clark's Mohawk, is fifteen and one-half hands high, girth five feet eleven inches, and weighs, in racing condition, one thousand and twenty-five pounds. The second prize was divided between Lady Richmond and Delaware Maid. For a description of Lady Richmond, refer to second prize mares and geldings, four years old, for light harness. Delaware Maid is a brown filly, owned by William Whitlinger, Delaware, Ohio; of good appearance; her pedigree not obtained.

SWEEPSTAKES.

Thoroughbred and Roadster Stallion, with five of his colts.—There were two entries. The prize was awarded the thoroughbred stallion "Bastion." For his description see second premium stallion in Thoroughbred class for four year olds. Four of the five colts exhibited were prize winners; three of them are described in the thoroughbred class as follows: "'Oriole' stallion, three years old, a second prize. Chestnut stallion, one year old, first prize. Lady Boston, two years old, first prize." Queen, a two year old filly, received a second premium, and is described in the General Purpose class. A stallion, two years old, was the fifth.

Stallions any age or breed, other than draft.—There were five entries. Chris. Hempy enters Royal Prince; W. D. McKey, Red Cloud; R. C. Stewart enters John Gilpin; D. W. Reed, Kentucky Woful and Mahoy, and Greenless enters Bastion. The prize was awarded "John Gilpin," a bay, three years old, bred and owned by R. C. Stewart, Seven Mile, Ohio; sired by C. M. Clay, Jr., dam by Indian Chief. He is sixteen hands high, light bone and muscle, long but clean limbs, excellent body and good style.

Mares any age or breed, other than draft.—There were six entries. Their average height was fifteen hands one inch, girth five feet eight inches, and weight nine hundred and eighty pounds. Two of the entries were thoroughbreds. The prize was awarded Lady Middleton, bred and owned by John Reber, Lancaster, Ohio. For a description, see the first premium awarded thoroughbred mares three years old.

Draft stallion, with five of his colts.—There were two entries: Taylor & Jones' Sir Robert Bruce, and Hossack & Silliman's Crown Prince. The first premium was awarded the imported Clydesdale stallion, Crown Prince, bred by Mr. Stephenson, Renfrewshire, Scotland; owned by Hossack & Silliman, Fredericktown, Ohio. He is eight years old, sixteen and one-half hands high, girth seven feet three inches, and weighs eighteen hundred and ten pounds. He has excellent bone, good muscle, back, shoulders, and legs; the ankles were diseased. Style and action remarkably good. Four of the colts exhibited were prize-takers in Draft class. For their description, see two year old stallion, first prize; two stallions, one year old, first and second prizes; one year old filly, first prize. The fifth colt was a two year old bay filly, entered in her class, and failed to receive a premium.

Crown Prince also received the prize for sweepstakes draft stallion, any age. Three entries. Taylor & Jones entered Sir Robert Bruce, and Jas. T. Miller entered "George."

Draft Mares, any age.—Eight entries in this class. Their average height, sixteen hands two inches; girth, seven feet; weight, fifteen hundred and forty pounds. The prize was awarded to a black mare, Queen, five years old, bred and owned by W. J. Harbert, Ostrander, Ohio. Sired by imported Lord Clyde; first dam by imported Niger; second dam, a Canadian mare. She is sixteen hands one inch high, girth seven feet two inches, and weighs seventeen hundred and sixty-five pounds.

JACKS AND MULES.

The entries in all the classes were made by one exhibiter, and the awards were as follows: Best jack, first prize; pair mules, first and second premiums; mule two years old and over, first and second premiums; mule one year old, first premium. All of which were awarded to Jerome Drais, Washington C. H., Ohio.

The following is a summary of the races during the extra days of the Fair:

DOUBLE TEAM TROT—MILE HEATS—3 IN 5.

Name of owner, and animal.	Heats.				Prize.
	1st.	2d.	3d.	4th.	
Wm. McCloy, Wilmington, enters b. s. Magic and mate	2	2	3	4	Third prize.
Albert Field, Ashtabula, enters r. g. Little Jake and Loafer	3	1	1	1	First prize.
Chas. Barth, Columbus, enters blk. m. Flora Clay and Queen of Sheba	1	3	2	2	Second prize.
Time	3:12	2:57	2:56	2:57	

PACING HORSE, MARE, OR GELDING—MILE HEATS—3 IN 5.

Name of owner, and animal.	Heats.			Prize.
	1st.	2d.	3d.	
S. C. Phillips, Xenia, s. g. Sleepy Tom	1	1	1	First prize.
A. T. Tallman, Marysville, s. g. Billy Scott	2	2	2	Second prize.
Jas. Alexander, Columbus, g. m. Nellie Gray	3	3	3	Third prize.
Time	2:22	2:21¾	2:22¼	

Judges—W. A. Neil, London; W. Morrison, Columbus; W. S. Shrum, Columbus.

2:30 CLASS—MILE HEATS—3 IN 5.

Name of owner, and animal.	Heats.					Prize.
	1st.	2d.	3d.	4th.	5th.	
J. S. Campbell, Murphysboro, Ill., b. m. Essex Maid	3	0	1	1	1	First prize.
E. M. Strode, Groveport, s. g. Red Oak	1	5	2	2	2	Second prize.
Albert Field, Ashtabula, r. g. Little Jake	2	0	3	3	3	Third prize.
W. M. Yeazel, Springfield, b. m. Fashion	4	3	4	4	4	
B. H. Colgrove, Sharpsburg, Ky., b. s. Whipple	5	4	5	5	5	
Time	2:30	2:30	2:30¼	2:32	2:31	

2:40 CLASS—MILE HEATS—3 IN 5.

Name of owner, and animal.	Heats.						Prize.
	1st.	2d.	3d.	4th.	5th.	6th.	
Albert Field, Ashtabula, enters r. g. Loafer	2	4	3	1	1	1	First prize.
David Postle, Columbus, enters blk. g. Jerry Hardwick	5	1	1	5	4	3	Second prize.
J. D. Clark, New Moorfield, enters r. m. Lady Clark	1	3	2	3	3	2	Third prize.
O. P. Chaney, Canal Winchester, enters g. g. Donk	3	2	4	4	5	4	
W. H. McConnell, Columbus, enters blk. g. Black Cloud	4	5	5	2	2	5	
N. M. Runyan, Marion, enters b. m. Ohio Girl	6	dist.	......	......	......	......	
Time	2:43	2:35	2:37¼	2:36	2:37	2:40	

RUNNING—ONE MILE DASH.

Name of owner, and animal.	Prize.	Time.
John Reber, Lancaster, enters b. m. Lady Middleton	First prize	1:46
J. P. Bidleman, Columbus, enters c. m. Maggie Shields	Second prize	
A. T. Tallman, Marysville, enters b. m. Bertie May	....	

Judges—W. S. Shrum, W. Morrison, S. F. West.

THREE MINUTE CLASS.

Name of owner, and animal.	Heat.					Prize.
	1st.	2d.	3d.	4th.	5th.	
David Postle and Son, Camp Chase, blk. g. Jerry Hardwick	0	1	2	1	1	First prize.
Wm. Greeno, Circleville, enters br. g. Outlaw	0	4	1	2	2	Second prize.
Wm. Whitlinger, Delaware, enters br. m. Delaware Maid	3	2	3	3	3	Third prize.
W. Baker, Columbus, enters b. m. Gold Dollar	5	3	5	5	4	
Jas. Clark, New Moorefield, enters g. m. Claudine	4	5	4	4	drawn.	
Time	2:40	2:43¼	2:46	2:37¼	2:42¼	

FREE FOR ALL TROTTERS—MILES HEATS—3 IN 5.

Name of owner, and animal.	Heats.		
	1st.	2d.	3d.
John Hines, Minerva, enters g. g. Silver Sides....	1	1	1
W. M. Yeazel, Springfield, enters b. g. Billy Yeazel	4	2	2
W. P. Kinser, Mansfield, enters g. g. Deception..	2	4	3
C. A. Palmer, Washington C.H., enters br. g. Rip Rap	3	3	4
Time	2:27¼	2:26¼	2:22¾

Judges.—W. Morrison, W. S. Shrum, S. F. West.

The names of the committees for the different classes were as folllows:

Thoroughbred.—W. Morrison, Wm. A. Neil, W. S. Shrum.

Roadsters.—W. Morrison, Wm. A. Neil, W. S. Shrum, D. Boyd.

General Purpose.—W. Morrison, Wm. A. Neil, W. S. Shrum.

Draft.—W. S. Shrum, J. B. Lucas, Wm. A. Neil.

Geldimgs and Mares for Light Harness.—J. B. Lucas, W. S. Shrum.

Saddle Horses.—W. Morrison, Wm. A. Neil, W S. Shrum.

Matched Horses and Mares.—Wm. A. Neil, J. B. Lucas, W. S. Shrum.

Trotting Stallions, Trotting Horses four years old, and Running Horses.—O. P. Chaney, W. S. Shrum, W. Morrison.

Thoroughbred and Roadster Sweepstakes.—J. O'B. Renick, D. Boyd, L. B. Sprauge.

Draft Sweepstakes.—L. B. Sprague, Z. H. Perrill, B. F. Reese, S. S. Lockwood, David Taylor, Jr.

Jacks and Mules.—Walter Morrison, Wm. A. Neil.

At all future exhibitions I would recommend a measurement and description of al animals entered for exhibition, and a record made of the same. I propose you should make the following additions to the premium list: To the Roadster class, one year old stallions, and sucking colts, male and female. Also add sucking colts, male and female, to the Thoroughbred and Draft class. The exhibition of Jacks and Mules has been made by one person only for several years, and has become of little interest to spectators and exhibiters of animals. With the exception of the disagreeable weather, everything connected with the exhibition in this department gave general satisfaction.

REPORT UPON THE CATTLE EXHIBIT.—BY R. BAKER.

My predecessor, the gentleman who filled the office of reporter to the Cattle Committee of 1877, having so fully enlarged upon agricultural societies, and cattle shows particularly, also upon the history of the different breeds of cattle exhibited at our fairs, that it will not be necessary for me to do so, or follow in that track.

Doubtless no one thing has done so much to advance the interests of cattle breeding as our State organization. Competition in the show ring is a means to stimulate every breeder competing, as well as outsiders, to greater exertion and closer examination into the individual points which make up an animal of the greatest excellence

All these societies, or shows for live stock, when carried on by men desiring to encourage the breeding of stock, and the mechanic in his arts, as well as all other industries in connection with the agricultural interests of the country, are calculated to increase the products and encourarge every effort of those employed in providing for the increasing demands made upon the soil, and especially for beef, cheese, and butter.

Our State organization seems to have been formed upon the true principle, and deserves to be encouraged and patronized by the poeple of Ohio in preference to any joint stock company's organization, for the reason that whatever may be made by the successful exhibition or fair, will be applied to make a more liberal premium list for the future, and to make the organization more efficient by encouraging every facility for a higher development of all interests connected with agriculture, when the main object of a joint stock company is to secure a good dividend, and to get an exorbitant interest on the capital invested.

The late exhibition at Columbus would not have suffered pecuniarily by a large and powerful company holding their exhibition at the northern extremity of the State during the same week, had the weather been favorable for visitors to attend. All must allow that every department in live stock, machinery, products, etc., etc., were up to, and, in most cases, exceeding the average, and all arranged by the managers of the departments and their superintendents in a manner not only satisfactory to the exhibiters, but in such a way as to be admired by the intelligent vistor.

The cattle department of the late fair, which comes under consideration in this report, was not second to any ever held in the State, so far as quality was concerned. Though the entries may fall a little short of some previous years, the show was made up by excellence of quality, the remark being frequently made, "Never was there a show in Ohio with so few inferior animals." If some cattle breeders of the State hesitated as to where they should exhibit, and eventually decided to pass by Columbus, hoping to do better, the faithful, who were determined to stand by our State organization, came along with the cream of our Ohio herds, representing the different breeds, especially the Shorthorn class, which would have been a credit to any exhibition, not only on this continent, but in any part of the world.

Before entering upon the report of the awards in the different classes, I wish to remark, for the consideration of the State Board of Agriculture, whether it would not be good policy to confine the exhibition of cattle to our own State? Ohio has more first-class animals of the Shorthorn breed alone, than could possibly be accommodated at the fair. Nearly all the counties of Ohio have organizations for the exhibition of stock, etc., and if the fair was confined to Ohio, these counties would forward along their best stock, and, we think, every year would show a deeper interest in the State exhibitions. If this Society was formed to help encourage the agricultural interest of Ohio, why not Ohio have all the advantages, as she has show stock sufficient to make a grand display, and most of it bred up to a high degree of excellence—worthy and in keeping with her high standing as a great State.

The Ohio breeders, as a body, do not desire to pamper their animals for show purposes, though some few feed up rather too high for breeding stock. They do not do this to the extent that many breeders do in other States, as we have had evidence, not only at our late fair, but also at previous exhibitions, and evidently gotten up for the purpose of going from fair to fair, to monopolize as many prizes as possible, and thus, in a measure, crowding out the most desirable class of animals. If the Board were to insist that the rule should be carried out in every ring—"not to give encouragement to over-fed animals"—no doubt the Board would be met with the remark, "You must have this abundant flesh to show the greatest excellence, or we could not see how near a state of perfection the animals may be bred to." This may be true of an unshapely animal, but to the *real fine* animal, when showed for breeding purposes, they do not need this overburdened load of useless flesh, and our best judges find it more difficult to make a satisfactory award when animals come in competition fixed up in this high state or condition.

It can only be a matter of time; this state of showing can not continue; for breeding animals are pampered and fed up to a condition much higher than a majority of the finest beef cattle prepared for special occasions—such as Christmas, etc.—to be exhibited in the meat-markets of the leading butchers of New York and other large cities. This stock can not be allowed, eventually, to prevail, when exhibited in competition with those in breeding condition. Would that the Ohio State Board of Agriculture were determined to make a stand on this point.

SHORTHORNS.

The choice exhibit made by Ohio breeders of this leading race of cattle, at the fair of 1878, is sufficient to show that the interest manifested by the early breeders has not diminished, but rather increased. Intelligence and close application have worked wonders in the business of bringing up this noble race to the high standard of excellence now to be found in such herds as were brought into competition. The pioneers, previous to, and even the Collingses, could not have anticipated more for perfecting the shape and style as well as the quality of their favorite breed.

All along, through the time of Bates, Althorp, Knightley, Booth, Beasley, and the breeders of the present day, whose means and personal attention have been applied to the improvement of the Shorthorn—and it must be admitted that these men have done much towards building up the race to a high degree of excellence—our Ohio cattle, as exhibited at the late fair, must have been approved by them as worthy to stand, in point of excellence, with any of the herds on that side of the Atlantic. A good feature in the Ohio herds is the goodly number of young animals on exhibition. This is a good indication, and shows to the public that the best of the State are kept in a breeding condition. All lovers of the race desire to see the young stock brought into the show-ring, and watch the success of these young things in the future exhibitions.

The general farmer of Ohio is not satisfied to watch around the ring and find only a herd of full-grown animals, pampered and trained to go from one exhibition to another, just for carrying off the prizes away from those that are superior for all practical purposes. These honest farmers are apt to grumble when the pampered herds prevail, and ask, Was not our State organization formed for the benefit and improvement of agriculture in all its branches, and cattle breeding not excepted?

The class was represented by the following herds: David Selsor, fifteen head, from bull and cows over four years old, down to young calves, all in fine condition, and were a credit to the veteran breeder; J. H. Anderson, seven head, all very fine and uniform almost in every point; J. Montgomery, six head of very choice animals; Baugh & Son, of Indiana, six head, bull and four cows over four years old, and one two year old heifer, all fixed up in extremely high condition; George W. Gregg, six head, all excellent young animals; G. J. Hagerty & Son, two head, the fine old cow Blue Bell 6th, and an extra fine bull calf; A. DeWitt, five head; R. Roberts, T. McPherson, J. Matthias, and others exhibiting single animals.

The ring of aged bulls contained seven entries, all ranking as prize animals. The judges examined this class and all others without consultation, as directed by *rule*. After a close and careful examination, the judges were unanimous in awarding first honor to Springdale Airdrie 2d, a red bull, straight and even, on short clean legs, ribs well sprung, broad and deep chest, a clean but masculine head set on a good neck, moderately thick, soft hide, well covered with fine hair. The second prize went to No. 5, Breastplate 2d, the Indiana bull, a Booth of large substance, being heavy fleshed, too much so for activity, but showed a vigorous constitution, and doubtless an easy feeder. No. 17, 13th Duke of Granville, rather high on legs, but a fine animal, of excellent quality and many good points, came third. This "*Duke*" is hard to beat as a show bull. No. 23, Royal Lad 2d, owned by D. Selsor, is a large, showy bull, and would do good service in any herd; he seemed too good to be sent away without a ribbon; also, Forest Napier deserves mention, he being a fine animal.

In the next ring, two years old and under three, two entries. The first prize was awarded to No. 41, Mazurka Judge, a remarkably fine and stylish bull, got by (231) Mazurka Duke of Airdrie, dam of the Nannie Williams sort. This bull is very even in all his points, and of excellent quality—in fact, conceded by all the judges to be one of the most promising young bulls they had ever seen, and whose future in the show-ring will be watched with high expectations. Second award goes to No. 39, Favorite, rather a large bull, too high on his legs; good style, with many good points, but not a very close second

In the next class, yearlings, three entries. The first honor goes to No. 24, Wheeler's Profitable, a stylish young bull of superior form and excellence, quite promising to make his mark in the show-ring hereafter. The second award is carried off by No. 12, Queen's Dunsmore, a fine bull; though not so even as other animals of this herd, is well worthy of his second place in this ring. Third prize to No 4, a young thirteen months bull, thin in flesh, of good form, and a nice handler.

In bull calves, three entries. The first in rank is No. 38, Baron Wiley, a rich roan, owned by Mr. Hagerty, probably one of the best calves ever brought into an Ohio show-ring, and his proportions indicate that he will make his mark at a future day in the ring of Shorthorn bulls. Second place is justly due to No. 25, Greenwood Duke of Goodness 5th, a promising red calf of excellent quality. Third is also due to No. 49, DeWitt's Blucher, not proportionately up to first and second, but a calf not to be despised, he being thin in flesh, evidently from a scant allowance of good feed.

In the class of cows over four years old there were eleven entries, all animals of such high excellence that it looked as though all were worthy of premiums. Had this ring been reduced down to the three worst (if I may use the term) animals, the three awards would have been justly bestowed. The judges made a careful examination, extending over the usual time for the purpose; but when such cows as Mayflower, Sharon Queen 2d, 10th Louan of Granville, Greenwood Louans 17th and 28th, Blue Belle 6th, and the four cows from Indiana, all fine animals, it would be expected that, to do justice, time must be had. In a ring of such animals it was not surprising to find, on the first vote, that we were not unanimous, two votes being cast for No. 7, one of the Indiana cows, and one for No. 13, Mayflower. The next declared Mayflower to be the unanimous choice for second honor. This is a very compact (red) cow, on short, fine legs, deep and broad chest, beautifully curved ribs, good crops, broad on loin, smooth hips, deep flank, even in every important point; her head being fine and her neck clean and tapering, gave her a stylish appearance; her skin soft and hair dense and fine, this, with her healthy and fresh look, and being in full milk and moderate flesh, we pass her off as a cow of great excellence. The third award went to the roan cow 10th Louan of Granville, a cow as level as possible, one of those animals which contain a great weight in comparatively little room, with good, expanding ribs, broad and deep carcass, but not overloaded with flesh, a nice handler, and evidently a true breeder. The Greenwood Louans made a good showing, Sharon Queen 2d, etc. In fact, a better ring would be hard to find at any exhibition.

The next class, three years and under four years old, there are five entries, a splendid party, all strictly prize animals. The first honors go to No. 19, a rich roan cow of good substance, round and level, of splendid quality, and showed every indication of being a good breeder. The second place is given to No. 15, Maud 3d, a red, of fine carriage, deep and broad, straight and level back, ribs well curved, and of fine quality. The third prize is put to No. 28, Greenwood Louan 30th, a fine young cow, not so heavy as the first and second, but being younger, had some disadvantage. The balance of the ring are both also owned by Mr. Selsor, and are fine animals.

In two years and under three years old, five entries—a splendid ring—the first prize being awarded to No. 21, Jenny Lind 18th, a neat, compact heifer, of great excellence, though rather small. Second honor to No. 10, Jessie Hopewell 5th, the Indiana heifer, a stylish animal, of large substance, fine hair, on a good soft hide—a very superior heifer. Third goes to No. 20, 14th Louan of Granville, a solid, good heifer—in some respects the best of the whole ring, she being more rangey, and growing, with ribs well sprung, and an even, straight back, and at a future day will show herself to be a fine matured cow.

The class of yearlings was small, being represented by two animals only; but these two partly made up for the lack of numbers, in the quality exhibited by the beauties. The first ribbon was awarded to No. 42, Lizzie Sharon 3d, who carried it off quite gracefully. This is a remarkably fine, stylish heifer, with moderately thick, velvety skin, and plenty of soft, fine hair, even in every essential point showing the greatest excellence. The second was placed upon Profitable 14th. This was a close contest, she being nearly equal to Lizzie, showing good constitution and growth, but not quite so stylish as Lizzie.

In heifer calves there was a party of ten young things. This ring attracted considerable attention, for it seemed that ten better calves of the Shorthorn tribe would be hard to find, all indicating good constitutions and in a healthy growing condition, and speaking favorably for the Shorthorns of Ohio. The first ribbon was deservedly carried away by No. 16, Mayflower 5th, a fine, red, smooth calf, of excellent quality. Second goes to No. 34, Greenwood Louan 38th, also a fine calf, of even flesh and good quality. The third honor was given to No. 43, Belle of Walnut, a calf of fine growth, showing good constitution, and well deserving of the award. Though Mr. Gregg's other calf got one vote, a more compact calf, but small, being quite young.

NOTE.—It is expected that allusion will be made to a trouble which caused an exhibiter and breeder of note to enter a protest against the first award in class of aged cows. I would willingly pass this over, could I do so without laying myself open to censure; and as the State Board of Agriculture placed this protest in the hands of the awarding committee, with power to examine into and adjust the matter (I can't help but think it ought to have been promptly met and settled by the Board), I will briefly state the facts. This said cow, owned by Mr. Baugh, of Indiana, during the exhibition in the ring, cast out a portion of the womb, inverted. This was not only witnessed by the person protesting, and other outsiders, but also by one of the judges. Before the appearance of the uterus, the cow commenced to strain, and passed off some urine. She continued to strain like a cow in labor, till she was compelled to straighten her back by the groom in charge of her, when the cow settled down quietly. But a discharge was manifest previously and also after this trouble. When before the judges, the owner claimed that the cow was not injured as a breeder, and had brought a calf within a year. The answers to questions were considerably mixed. The question to be settled, was she a sound cow when the award was made? All breeders who have experienced this trouble with a cow, know that it is a serious matter, and especially in a valuable cow, and more so when in a high condition of flesh. The trouble may be constitutional weakness, or caused by a strain, or hook by other cattle. In either case, or from whatever cause, it is considered to be an unsoundness. A majority of the judges decided that such was the case in this instance, and voted that the protest be sustained. Consequently the aged cows were ordered into the ring again, when the red ribbon was carried up to "Mayflower," who carried it off like a May queen; the second going to the 10th Louan of Granville. This being done, another Indiana cow and Mr. Selsor's Greenwood Louan 28th came into close competition, also Sharon Queen 2d. On the first vote, a majority of the judges decided in favor of the Indiana cow, which left our awards for aged cows as follows: Mr. Anderson's Mayflower, first; Mr. Montgomery's 10th Louan of Granville, second, and Mr. Baugh's Red Rose, third.

DEVONS.

This is a class admired for their rich red color, and for their nice, clean heads, adorned with long, upturned horns, fine, and of a yellow hue. The cows are not considered very profitable for dairy purposes, but there are exceptions. They certainly give very rich milk. The steers of these North Devons are good feeders, and when matured make a large, even carcass of excellent beef. Steers of this class grow larger in proportion to bulls and cows, and are considered by many quite profitable to fatten for the shambles. In those sections of the country where oxen are used for teaming purposes, the Devon cannot be equaled for their activity and endurance. At our late fair this breed was well represented by Messrs. Buckingham & Howard, Whitmore, Miller, Gower, and Ford. Thirty-four head, many of them good representatives of the breed.

In class of bulls over three years old, four entries, all good specimens of the class. The first ribbon goes to Mr. Miller's Barrister, three years old, a uniform, strong bull, of deep chest and vigorous constitution. Messrs. Buckingham & Howard's Barnemo takes second ribbon, he being a fine bull of excellent quality, a very close second. The ring was over the average of the Devon race of show animals, Barefoot and Redcoat both being very good animals.

In class of one year old and under two, two entries. Neither can be classed as very superior young bulls. Mr. Whitmore's Glen Rey, which takes first prize, is a fair, straight bull, with good hair. The second prize to Dr. McPherson's Scottish Chief.

In class of bull calves, eight entries, from five weeks up to nine months old. The first prize goes to Mr. Whitmore's three months old calf, and second to Buckingham's "Gold," nine months old; both very promising calves, of good quality. The whole ring promise well for the future of Ohio Devons.

In class of cows over four years old, all showing well, the first prize going to No. 5, Blue Eyes. The judges consider this cow a very superior animal, perhaps as good or a better cow than was ever exhibited at an Ohio fair. She has a slender, graceful neck, a light, short head, bright eyes, and a fine, yellow horn. The second goes to Mr. Whitmore's cow, the competition being very close between this cow and Mr. Buckingham's No. 3, both excellent animals and in fine breeding condition, giving every indication of being true breeders and easy feeders; both even and smooth, with ribs well sprung, with deep and well spread chests; skin mellow and hair fine; heads and horns about complete; No. 3 being a little the nicest handler, she getting one vote. The whole ring were all good specimens of the Devon race, and gave good evidence that the Devons, though not numerous in Ohio, were not depreciating in uniformity and excellence of quality.

In class of cows three and under four years, four entries; first award to No. 3, Mr. Miller's "Red Patterson," an even cow of good quality; the second to Mr. Buckingham's "Nemo Philla;" a very close competition in these two cows.

Two years and under three years old, three entries, first prize going to Mr. Buckingham's heifer, a complete beauty, well worthy of the honor conferred; second to Dr. McPherson's heifer; good in many points, but inclined to be a little coarse.

In one year and under two years old heifers, five entries; first ribbon goes to a fine, smooth heifer of Mr. Buckingham's, Nemo Philla 6th; second to Dr. McPherson's "Rosa."

Heifer calves, four entries; Mr. Whitmore's Minnie taking first prize, and Mr. Buckingham's Effie the second. The judges repeatedly remarked how uniform Messrs. Buckingham and Howard's herds are, even from the oldest animal down to the youngest calf.

ALDERNEYS OR JERSEYS.

This breed of the Channel Isles is well adapted for the rich man's lawn, or for those families in cities where a single cow is used for supplying the family with a good quality of yellow cream and butter. But should such person or families wish for milk after the cream is taken off, they will find the skimmed milk from the Alderney very blue and a poor substitute for milk compared with that from other breeds of cows, notwithstanding, they are convenient for a small barn, being very docile and easily handled. The bulls of the Channel Island breeds are often very vicious, and when four or five years old need to be handled with the greatest care and judgment. For some years breeders have made it profitable to raise this class of cattle to supply the demand for family cows. Much useless contention has been manifested as to the merits of this or that blood. There are several registers at the present time, each claiming a superiority. This has been carried out extravagantly. The black points, also, have been advocated to such an extent that animals not having these peculiar points, with black tongue, are set aside as unfashionable, not bred to line, etc. All admit that there are many of the most rich butter cows lacking these very prominent points.

At the late fair we had some fine specimens of these cattle, the Kentucky herd of Mr. Poyntz's numbering sixteen head, quite uniform, and showing careful breeding, not a poor specimen in the whole lot.

In aged bulls, there were three entries. The first prize going to No. 19—Kentucky 2d—a good animal, and a good sire, as the young things of the herd show. The second to an old bull, No. 15—Veto, Jr.—with a very yellow skin of fair quality.

In two year olds and under three, there were two entries. Prize to No. 20, a fine young bull.

Of yearling bulls, two entries, both animals owned by Mr. Poyntz. The prize was awarded to No. 22—Rabbi. This young animal is as good a specimen of the Alderney breed as can probably be found in the State. We considered him ahead of any bull on exhibition.

Bull calves, two entries. Prize No. 18, Mr. Whitmore's calf.

In the classed of aged cows, we had eleven head in the ring, all ranking high. The competition was close between four or five animals, so much so that the result of the first vote was a cow to each. After a further examination and consultation, a majority of the committee voted for the first honors to go to the fine old cow, "Cowslip Lassie," No. 16, owned by Mr. Whitmore. Second was awarded to Mr. Poyntz's No. 27, "Lucille."

In two year olds, but one entry, this being Hoover & Co's. No. 4, "Miami Beauty." Being a fair specimen, she was allowed to carry off the ribbon.

The yearling heifer, "Zoe" No. 13, carried off the prize.

In heifer calves there were five entries No. 7, "Miami Princess," being best, claimed the prize. Mr. Poyntz's "Lizzie" would have been a close second, had a second award been offered.

THE AYRESHIRES.

This breed is noted for diary purposes. Being a small, hardy race, they are better adapted for thin soil, where pastures are scant, being better able than the heavy Shorthorn to travel about to get their feed; and, when milk is needed in large quantities for cheese making, this breed will answer, but when butter is the object, they are no so good as the Shorthorns and some others. They have been sought after in sections of the country where the land is used for the pasturage of cows, for supplying the large cheese factories with milk. Whether the Holsteins will eventually take their place, remains to be seen.

Only one herd of this breed was represented at the late fair, that being owned by A. J. Wilson, of Lorain county, which is allowed to be the best in Ohio, and probably in any Western State, Mr. W. having imported liberally, thus keeping his stock, by these changes and additions, in a remarkable healthy condition and every animal showing a vigorous constitution. Wherever he puts his herd in competition, Mr. W. has the satisfaction to see that most of his animals come off with high honors. Mr. Wilson offered twelve head for the inspection of the judges. His aged bull, "Lorain," carried off the red ribbon. .Though he met with no opposition, he was well worthy of the honor, being, in the estimation of the judges a true and fine specimen of the Ayreshires.

The prize for yearlings was awarded to Mr. Wilson's young bull, "James Wilson."

The prize for bull calves goes to a fine young calf of "Annie's" Mr. Wilson also exhibited another very good calf.

In class of aged cows, there were six entries, all good representatives of the Ayreshire breed. The judges highly commend the whole for uniformity and excellence of quality, every cow showing a vigorous constitution, and giving good evidence of being heavy milkers, for which purpose Mr. W. is evidently breeding. First award goes to the cow "Annie," and second to "Snowdrop."

The prize for yearling and heifer calf also goes to animals of same herd.

DAIRY STOCK.

One entry, under head of Alderney or Jersey breed. This cow is owned by Mr. Poyntz, of Kentucky, "Madam Kyle," ten years old, and weighs eight hundred and fifty pounds. It is *claimed* that this cow calved January 1, 1878; that she was tested for ten days, commencing May 1st, in which time she gave four hundred and nine pounds of milk, and made twenty-five and one-fourth pounds of butter; that, after an interval of fifty days, another test was made for ten days, resulting in four hundred and three pounds of milk, and twenty-four and one-half pounds of butter. This statement it signed by S. M. Poyntz and Thos. M. Perkins. *No affidavit given.*

FAT CATTLE.

One entry, a bullock, over four years old by Mr. Postle, near Columbus. The weight of the animal is 2,575 pounds. He is up on the legs rather too high, but being well fatted, and this flesh distributed quite evenly—a good proportion on the most desirable parts. His crops and loin very good, also flank and hind-quarters heavy, with a deep and full brisket, and his broad chest gave evidence of a good constitution. Though he did not appear to be in a thriving condition, but evidently had been kept over the period to make it profitable for any future feeding. He was awarded first prize for fat oxen.

GALLOWAYS.

A. Dewitt presented a seventeen months old animal of this breed—a fair specimen of this hornless breed of Scotch cattle, which are, when fatted, superior beef cattle—the meat being rich and juicy, with a large proportion of lean meat being intermixed with the fat, and is nicely marbled. Whether this breed is ever to be very extensively distributed over the States, is questionable, though for a mixture with the leggy Texans, the Galloway would improve those cattle vastly by reducing the horns, giving them more expanding ribs, and also more aptitude to fatten. The committee commend this animal as worthy of consideration by the State Board of Agriculture.

SWEEPSTAKES ON BREEDER'S HERD.

In this class there were two entries. J. R. Anderson presented one bull, "Springdale Airdrie 2d," with Mayflower, Sharon Queen 2d, Maud 3d, and Maid of Springdale. Mr. Selsor exhibited his bull, "Wheeler's Profitable," and four of his superior cows and heifers. The prize was unanimously awarded to the Ross county herd. The young Profitable and the females of the same herd being animals of great merit, and seemed worthy of any honor. But "Springdale Airdrie" being a bull three years old and extra fine, with such cows as "Mayflower," "Sharon Queen," etc., to back him up, this herd made a display that would be hard to beat in any show-ring on this continent; and these animals were all in fine breeding condition—not pampered, as most of our best herds are, when exhibited for these high prizes.

I may be permitted to digress, just to remark that the highest honors conferred upon this herd during the late State Fair were *ratified* by two other committees during the following week at the Toledo "Tri-State Fair." The same herd, in competition with a prominent herd from Illinois, also one from Kentucky, and the *same* Indiana herd, came off victorious in the Shorthorn Class by taking first herd prize as best of class, also the high prize open to any breed; and these decisions were made by two different committees. And, moreover, this same cow, Mayflower, was awarded the prize for the best single cow at Toledo.

Not only Mr. Anderson, but all breeders of Ohio, and others interested in Ohio Shorthorns, may well feel proud of this fine herd; and, also, that ever cow is a *true breeder.*

Cow with calf at foot, three entries; Mr. Selsor exhibiting two cows with a calf each, both or either worthy of honors; Mr. Anderson showing Mayflower and her daughter, Little Mayflower 3d. The prize was awarded to Mayflower and her calf.

EXHIBITER'S HERD.

In this class there were three entries. Mr. Baugh's herd, headed by Breastplate 2d; Mr. Montgomery's herd, headed by 13th Duke of Granville, with his four cows and heifers, all having taken class prizes; and Mr. Selsor's, headed by Royal Lad 2d—the ribbon going to the Indiana herd. This was not unanimous, one vote being cast for the "Duke" and his party.

In the class for bulls of any age or breed, animals having showed in class of Breeder's Herd could not compete for this prize, or in the single cow, which was an oversight when the list was arranged; as animals competing in Book 21 were equally entitled to compete in Book 22, with the exception of Breeder's Herd, which was intended only to be kept from competing for open Exhibiter's Herd. Here we had Royal Lad 2d, 13th Duke of Granville, Breastplate 2d, Mazurka Judge, and others—the "Judge" being hard to beat in any ring of bulls. His excellent form and stylish appearance, with his vigorous constitution and his nice working condition, combined to make him a bull of superior excellence. The prize was awarded to Breastplate 2d—a bull with many good qualities, but too heavily loaded with flesh for active service.

In the class for cows of any age or class, there was a good ring competing for this honor. After making a thorough examination (the contest being between animals of the first quality, such as Montgomery's fine rich roan, three years old, the Indiana cow, D. Selsor's Louan, and others), the prize was eventually given to Mr. Montgomery's roan heifer, she being worthy of the high honor, and carried it off quite gracefully.

BOOK 23.—DEVON HERDS.

There were two entries. Mr. Buckingham's No. 1 was the successful herd, and was awarded the prize. The herd of Mr. Whitmore made a good display.

BOOK 25.—AYRSHIRE SWEEPSTAKES.

Mr. Wilson's was the only herd, and took the prize on bull and four cows; also, on cow with calf at foot.

BOOK 26.—ALDERNEY OR JERSEY SWEEPSTAKES.

In herds, there were three entries, which made a very respectable ring. One of these herds took the first prize for cow, and the other the first prize for bull—the award being made to Mr. Poyntz's herd.

For cow, with calf at foot, the award was in favor of Mr. Whitmore's fine old cow, Cowslip's Lassie, and her calf. This was the first cow, in the Alderney class, and also the first prize for bull calf.

REPORT UPON THE SHEEP EXHIBIT.—BY ANDREW M'FARLAND.

The undersigned, appointed as reporter to the committee in the sheep department at your twenty-ninth annual fair, attended with the committee during their examinations and in making their awards, and performed, as far as possible, according to his knowledge, the duties assigned him, as herein follows:

On Tuesday, at two o'clock, the Middle Wool class of sheep, in entry-book 30, was called into the ring by the member in charge, Mr. Stone, and the examination was commenced under the superintendence of Mr. Deardorff, the first competition in this class being on rams two years old and over, and in it there were but two entries, on which the first award was made to J. H. Gower, of Springfield, Ohio, and the second to G. J. Hagerty & Son, of Hanover, Ohio. And in the next entry in order, of ram lambs, there were six presented for competition, and the first premium was awarded to G. J. Hagerty & Son, the second to J. H. Gower. Three ewes over two years old came next in order, and of these the pen of three, numbered 6, 7, and 12, was awarded the first premium, owned by G. J. Hagerty & Son; and the second was also awarded to the same firm on another pen of three ewes, numbered 3, 5, and 13, respectively, by means of patent metallic numbers fastened in their ears; and the next award was for three ewes under two years old, only two entries, and the first premium was given to G. J. Hagerty & Son, and the second to J. H. Gower. Then came the ewe lambs, which made the closest competition in this class of sheep, and after much consideration and close examination resulted in favor of the three owned by G. J. Hagerty & Son, and the second to those of J. H. Gower; yet the committee thought that Mr. Gower might have made a better selection from his lot than the three which he presented for competition. The sheep in this class were all of the Southdown breed, although some of them may have had a dip of the Oxforddowns, as shown by the greater length of wool than that of the pure Southdowns. Of the Southdowns there were twenty-nine, and of other fat sheep but three. The committee thought they should make their awards to the sheep having the best quality for mutton-producing animals, without special regard to the fleece.

Next came fat sheep of any class, of which there were but two entries, and the first premium was awarded to David Postle, of Camp Chase, Ohio, on the three wethers, weighing respectively as follows: 278, 276, and 260 pounds; the second to J. J. Dodge & Son, South New Lyme, Ohio.

The next, on single fat sheep, the first was awarded to David Postle, on a half-blood Merino, manifesting that the committee did not think that Merinos made inferior mutton. The second on fat sheep to J. J. Dodge & Son, on a sheep having very good lustre wool. A question arises here in my mind as to why there were so few entries in this class of Middle Wool sheep. Was there not sufficient inducement? or are sheep of this class not so highly esteemed by their owners as to cause them to be brought out for comparison of qualities? We submit these questions for the consideration of all concerned. The committee on this class was discharged after subscribing their names to the awards.

LONG WOOLS, LEICESTERS, AND COTSWOLDS.

Entry-book 29 was taken out, and the sheep as therein entered were exhibited for competition, and awards made by a carefully selected committee acquainted with the qualities of Long Wool sheep. First in this class there were six rams, over two years old, brought out. The first premium was awarded to a Cotswold, owned by J. J. Dodge & Son, South New Lyme, Ohio, a sheep of great size and form, bearing a very large fleece of lustrous wool; and the second award to a Leicester, owned by George Garford, of Elyria, Ohio. The fleece of this sheep was a perfect lustre wool, but the sheep was not so large or heavy as the Cotswold. There was another ram shown in this class worthy of commendation, by A. M. Clark.

Of rams under two years there were twelve brought out into the arena, and the first award was on a Cotswold, owned by J. J. Dodge & Son, and the second to another Cotswold, owned by Henry E. Clark, of Pittsfield, Ohio. There were only sixty-three Long Wool sheep on exhibition.

LONG WOOL RAM LAMBS.

Here allow the statement of the fact that one exhibiter claimed the right to enter and exhibit a ram lamb in the list of rams under two years old, and we think strict construction would sustain his position, but custom makes law in this as in some other cases.

Here are twenty-seven ram lambs, and their splendid forms and still more splendid fleeces demanded the admiration of all beholders, and their docility was one of their qualities occasioning remarks commendatory not only of the sheep, but also of their owners or their keepers.

This grand show appeared to bewilder the committee, but after very careful examination, and manifest anxiety to do justice in their decision, they made the first award to J. J. Dodge & Son for a Cotswold bearing most excellent lustrous wool, and the second to a Cotswold owned by Henry E. Clark.

Next in order were the pens of three ewes of two years and over, and the competitors were J. J. Dodge & Son and George Garford, the latter getting the first premium and the former the second, the Leicesters being considered by the committee as having the best lustre wool, and also as having the best qualities for the production of mutton.

On pens of three ewes under two years old the Cotswolds owned by J. J. Dodge & Son took the first award, and the Leicesters owned by George Garford the second. In this case the committee regarded the Cotswolds as the largest and heaviest fleeced, but the Leicesters as easiest kept and fattened, and bearing the finest and most lustrous wool. There were but three entries in this class. Then came five pens of three ewe lambs: the Cotswolds of J. J. Dodge & Son getting the first, and the Leicesters of George Garford the second award, thus closing our work on this book of entries, and the work of the day in the sheep ring.

And now let us indulge in a few reflections in regard to the Long-Wool sheep being very advantageous to their owners who have intelligence enough to know how to manage them, their carcass being so large that when well fattened for the market it will command the highest price, and whose lustrous wool will command almost the highest price at almost any time, and sometimes decidedly the highest price by ten or twenty cents per pound. Such wool was worth eighty-three cents per pound in the year 1873 in a manufactory in Pawtuket, Rhode Island, when the highest price for other wools was about sixty cents. Because of these facts we do not understand why there is so little attention, comparatively, given to the long lustre wo led sheep by individuals and associations.

Entry Book No. 32—*Sweepstakes on Long Wools.*—Exhibited on Friday. Ram of any age, with three of his get. Henry E. Clark was the successful competitor for first award, and George Garford the second. The committee having some doubts as to the time, another ram in competition in this class was shorn, having been shorn in Canada, we think most probably the other competitors received the benefit of this doubt. You will here allow the statement that your reporter had the promise of facts in regard to these Long-Wool sheep, their origin, weight of fleeces, length of staple of one year's growth, etc.; but possibly through the excitement consequent on the fair, these promises have been forgotten, and of course we will not be chargeable with neglect. The committee on sweepstakes in this class was not the same as the one on entry book No. 29, nor on entry book No 30, a Middle-Wool sheep. And still another committee has been called to make the awards on Merinos and sweepstakes of Fine-Wool sheep, the exhibition of which had been postponed because of rainy weather until Thursday at ten o'clock.

Thursday morning at ten o'clock animals in entry book No. 28 were brought out, and after still more delay because of the rain, the committee proceeded to examine rams two years old and over, of which there were twenty-five entries, and this committee was as surely in a quandry as was any of the other committees on other classes. Mr. E. A. Stone, the member in charge of this department, at this juncture, after mature consideration, having concluded that his presence at his home, near Gallipolis, was a greater necessity than his continuance here, he called the shepherds and others to order in the sheep department to make some statements, and ask them to excuse him from further service on the occasion. His statements in reference to the difficult and arduous task of procuring unbiased persons capable and willing to serve on committees was appreciated; his anxiety in regard to his family and neighbors in the vicinity of Gallipolis, where the yellow fever was rapidly spreading secured the sympathy of all his hearers, and his request was most cordially granted, in accordance with a resolution of the State Board of Agriculture at its meeting on the evening previous, for his release, and that his place should be filled by that most courteous and efficient superintendent, Mr. U. C. Deardorff, of Canal Dover.

Mr. Deardorff having the book in charge, now demanded certificates in accordance with the rule in the case, respecting the time and manner of shearing the sheep now in the ring. In accordance with this demand, certificates were handed over to the committee, and from the committee to the reporter, and after much deliberation fourteen were selected, and the others were sent back to their quarters. And after much more close examination and comparison the three awards were made in this class—the first to Mountain Torrent, owned by E. J. Hiatt, Chester Hill, Ohio; the second to a sheep (without a name) sired by Prince, and his dam by Fortune, owned by Alexander McCalmont, Hickory, Washington county, Pennsylvania; and the third to a sheep called Doctor, owned by Copper & McFarland, Mt. Vernon, Ohio. The certificate for this sheep is given by a wool dealer of Mt. Vernon, who saw this sheep on the 4th day of April, 1878, and he was then closely shorn, and also that he bought the fleece from the owner of this sheep, which weighed twenty-seven and one-half pounds; and we may state the quality of this ram's fleece is excellent. Doubtless this Doctor will be much more advantageous in the locality of his practice than are many much more noted doctors.

Aside from equality in good points, there was another cause for carefulness in making the awards, as manifest in the remark that "the presumption is that the meaning of the phrase *closely shorn* has more reference to the shears with which they were shorn than to skin on the sheep." This remark caused the staple on many of the sheep to be measured, showing a much greater difference in length of staple than was supposed, some of the best sheep certified to have been shorn about the 1st of April bearing staple of only one inch (without stretching), while some others were from one and a half to one and seven-eighths of an inch. One sheep certified to have been shorn from the 15th to the 20th of April, and at the same rate of growth for the balance of the year, the staple on these sheep would attain the length of four and two-thirds inches, which, according to my notion, is *rather long*.

In regard to the first award, we thought that size and quantity of fleece had possibly much to do in forming the decision, the sheep being large, and having a long staple, but not so compact as it ought to be—lack of yolk in fleece, and besides there were several other points of objection, such as the head and neck being too long, and his sides too flat, neither of which faults were attributable to either of the others receiving awards, nor to many others not receiving anything. A ram called Victor Wright, owned by A. W. & L. C. Tyler, of Alexandria, Ohio, shown in this class, was more heavily folded than any other, but although some regarded him as the best, yet others thought there was too much of the good thing, called folds, on him; that there was a good chance for the green flies to burrow or shelter among the folds and grease and lay their eggs, that when hatched could very soon destroy the animal. Others object, saying because of the weight of folds the ribs are held too much in the shape of a gable roof, or rather the rafters, and that the back of the sheep conforms to the rafters. Now, although there may be some truth in these criticisms, yet the question arises, how will you get folds just where you want them without having some more than you want. We presume it is a fact that no intelligent breeder would want all of his flock to be as heavily folded as the sheep above referred to, and yet that sheep might be of greater benefit in some flocks of smooth and light fleeced ewes than any ram on exhibition here. Mr. J. N. Wright, of Johnstown, Ohio, had another ram quite similar in regard to folds, but having a rather fine fleece, making a decided contrast with another owned by W. J. Emmons, of Kenton, Ohio, whose fleece was dry, and long, coarse hair protruding from the large folds, giving him a peculiar appearance among the more smooth sheep. Albert Quigley, of Cadiz, Ohio, exhibited in this class a large ram which was worthy of special notice, is known by the name Peerless; was bred by the Baily Brothers, of Washington county, Pennsylvania, whose weight is certified in full fleece, was one hundred and ninety pounds, and twenty-eight pounds was his best fleece; his owner may well be proud of him. Another sheep in this class, owned by J. M. Miller, of Hickory, Pennsylvania, was regarded by many persons as superior in many points to any of those receiving premiums.

Rams under two years old come out next in order. Of this class there were twenty-four in the ring, and all of them good; and to find the three best was a difficult task. Nine of them were selected from which to select the three best, and at last Ed. Hammond, owned by James Glass, of Burgettstown, Pennsylvania, received the red ribbon; a sheep owned by W. A. Herriott, of Oakdale Station, Pennsylvania, the blue; and one owned by Wm. H. Yeazell, of Springfield, Ohio, the white, thus ending this contest. These awards were more generally acknowledged as right than the preceding ones on this book. Young Ed. Hammond is a magnificent sheep—no special objective point, except, possibly, the wool on the lower part of the body is not quite proportioned to that of the upper part. He stands a perfect model, feet and legs in proper position under the body, as do most of Mr. Glass' sheep. The Herriott ram is very nearly equal; but the one that took the white ribbon had longer staple of wool than either of the others, and yet certified to have been shorn between the 13th and 20th of April. If his wool continues to grow at that rate until April 20, 1879, it will measure over four inches, which, for the quality and its density on the sheep, would be very extraordinary, and far excelling his ancestors, raised by Edwin Hammond, of Vermont, whose sweepstakes only had two and one-half inches of his best year's growth. This sheep was rather droop rumped.

Ram lambs, twenty-one in number, are now challenging the admiration of all good judges of such sheep. After thorough examination, a separation was made for special comparison, and at last Ben. Franklin, certified to have been dropped March 22, 1878, received the red ribbon, owned by S. S. Campbell, Cadiz, Ohio; the blue was tied on a lamb owned by Wm. L. Archer, Burgettstown, Pennsylvania, and the white ribbon awarded to Copper & McFarland, of Mt. Vernon, Ohio. Ben. Franklin's neck is rather long, and possibly his fleece is not quite oily enough. The Mt. Vernon lamb has a most superb fleece of the finest style of American merino. If there be any fault in him it is that of being rather feminine in general appearance. The Archer lamb carries a heavier fleece than Ben. Franklin, and stands better on his legs. With these criticisms we will stop, and introduce the class of pens of three ewes over three years old. Here are sixteen trios, and what a fortune they would be in the hands of an intelligent shepherd. Many visitors say, "We never saw a show before," and there is doubtless more truth than poetry in the assertion. Had these sheep been truthfully described forty years ago, the description would have been regarded as the effusion of a diseased brain—as the description of animals existing only in the imagination. The committee sent twenty-one of this nice flock out of their sight after looking them all over again and again, and then the same process was gone through, until the red ribbon was given to W. L. Archer, of Burgettstown, Pennsylvania, and the blue ribbon to Samuel Campbell, of Belmont county, Ohio, and the third or white ribbon to J. M. Miller, of Hickory, Pennsylvania. Of these sheep we will only say that those of each pen were well mated, well formed, and well fleeced, or covered, as were nearly all exhibited in this class; yet some few had entirely too much of the masculine in their contour, especially in heavy folds upon the neck. We now pass on to trios of ewes under two years (not including lambs), and here we have thirty-six splendid young ewes (one year old some time past). This flock we regard as more even, and showing as good care and better breeding than the flock of ewes over two years old. Five trios were eventually brought in for special comparison of qualities, resulting in the gift of the red ribbon to James Glass, of Burgettstown, Pennsylvania, his ewes having greater uniformity in the greatest number of good points. J. M. Miller, of Hickory, Pennsylvania, received the blue ribbon, and S. S. Campbell, of Cadiz, receiving the white ribbon, his sheep not being so well covered on their jaws and lower parts, nor standing on their hind legs so well as some others not getting any award. There was neither a sickle-legged nor cat-hammed ewe in either of the other trios. This class is dismissed for the admission of trios of ewe lambs, a flock of thirty-three manifesting decidedly successful, intelligent breeding, in the fact that this exhibit excelled every previous exhibit, except that of ram lambs of only twenty-one in number. But good as they were, the committee very soon selected the trio for the red ribbon; yet few knew the fact until they had decided on the other two awards, which required much time, the competition being so very close. Archer's lambs did not need a ribbon to distinguish their good points, but yet they got the red; S. S. Campbell the blue, and Captain J. G. Blue, of Cardington, the white, the latter being more heavily folded than either of the others receiving the awards, their owner being a new competitor for public favor, as well as awards at fairs. No exhibiter in this class especially should feel discouraged because of missing awards; they should rather feel elated that they participated in making such a grand exhibit at the Ohio State Fair. Allow us to state that the lambs taking the last award were sired by the Captain's ram, sired by Edwin Hammond, Sr., by Major, by Silverhorn and their dams, from the flock of Rockwell & Moore (see Vermont Register).

There were 233 merino sheep on exhibition; the whole number of sheep on exhibition, 338.

In sweepstakes on fine-wooled sheep, Book 31, the quality and quantity of wool, the perfection of form, and size to be especially considered. In this class there were five entries; first and second premiums only. The first was awarded to S. T. Porter, of Cadiz, Ohio, and the second to Copper & McFarland, of Mt. Vernon, Ohio. The name of the former is Pat. Meloy, and the latter, Doctor. Pat. Meloy is much the largest sheep, shearing about twenty-one pounds of one year's growth. The size of the sheep had much influence in making the award.

Ewe of any age, with three of her lambs, came next, and the first award was made to S. S. Campbell, of Cadiz, Ohio, and the second to E. J. Hiatt and Brother, of Chester Hill, Ohio, the latter being so old that she had lost some of her teeth. She was at least ten or eleven years old. While looking at that old ewe, that had no doubt been good once, I wondered if the committee would feel bound to have awarded a premium to her owners provided her dead carcass had been brought instead of the very old, yet living, carcass; and the question arose in my mind, was the premium awarded for what the animal is now, or for what it has been? and after further consideration, I concluded that the award was made on the *has been* theory. But here come the four flocks of sheep, consisting of one ram, three ewes over two years old, three ewes over one year old and under two years old, and three ewe lambs, bred and owned exclusively by the exhibiter. Here there was some conflict of opinion respecting the exhibit of Mr. J. M. Miller, of a ram which he had purchased from Mr. W. L. Archer. But according to the ruling of the superintendent, Mr. U. C. Deardorff, this sheep was excluded; and after careful examination and consideration, the committee made their last awards at this sheep show—the first to S. S. Campbell, of Cadiz, Ohio, and the second to E. J. Hiatt, of Chester Hill, Ohio.

GENERAL REMARKS.

We think the exhibiters of Merino sheep at this fair have manifested a decided advance toward perfecting the American Merino sheep in the form, the size, and the fleece. I speak without any regard to points as they may be made in a sheep register, for I never saw one, but have one in my own mind. Every sheep-breeder should have his registry of good as well as bad points in his mind's eye, else he will not be successful in that pursuit. Breeders of stock of any kind approximate very nearly to their reasonable aim.

We have indisputable evidence that the Merino race of sheep has yielded to the efforts of the breeders, and assumed various forms of body as well as covering for the body; and we have evidence as positive that the natural breeds of sheep in various countries have conformed to the design of intelligent breeders. That such splendid sheep, in such diversity as we had exhibited at our fair, of Merinos, of Cotswolds, of Leicesters, of Southdowns, and, in this State, of Lincolnshires, and other breeds of good sheep, have each and all had their origin in the Argali, is evidence of the truth of our proposition.

We presume that perfection has been very nearly attained in the breeds of long-wooled sheep, and the greatest difficulty with them now is to retain that perfection. As there are many men of many minds, so there are sheep of many kinds. And now, to attain perfection in the Merino as a race, there must be agreement in regard to the qualities of that race. We have at present many different kinds of Merino sheep in this, as well as other countries. The fine Saxon, whose fleece only weighs two pounds, is a Merino, as well as the larger, heavily folded sheep, moulded after the Negretti race or type, whose fleece weighs thirty pounds; and the breeders of sheep in Lincolnshire once run mad after long wool, and bred for wool and bones so much that they have been described as being like their long, lank horses—two great ends, a long, thin, weak middle. They thus lost the thick, firm, barrel-like carcass, broad, flat back, fine, clean bone, and inclination to make fat. And here allow the statement that, according to good authority, the pure, improved Lincolnshire is regarded as being the best lustre wool in the world; and it is regarded as the longest lustre wool, as specimens or samples, of only one year's growth, have measured over twenty inches. Why should not the raising of such sheep be recognized in Ohio? But, it may be asked, where, in this State, shall such long-wools be grown? and we allow the President of the National Wool Growers' Association to answer, "that they are well adapted to profitable breeding for mutton and wool combined, in situations where the land is rich, not subject to drought, and adapted to root culture, and where city markets are easily accessible. They are great favorites with dairy farmers, and with grain-growing farmers who wish to keep but few sheep." And in this connection allow the statement as a fact, that Merino sheep are not well adapted to low or wet pasture lands, but easily adapt themselves to all other kinds of lands; and they may be kept in large flocks where the others can not.

We see that different breeds are necessary to the different conditions of soil and circumstances. Hence we naturally inquire, why be anxious to have set rules or points for breeding? And the answer may be given, that the royal flock of France was bred from a motley set, of nearly every characteristic of unimproved sheep, yet, because of the fact that the management of the flock was given to one having a definite idea of what he wished to accomplish, his *ideal flock* was at length realized, and their characteristics so firmly fixed that they may be continuously maintained. And for the purpose of eliciting consideration, we might give a description of what we regard as a model Merino sheep, and breeders of Merino may agree—as we know very many do agree—on many specific points. And the first point is a good constitution, indicated by a good form, a good-sized chest, a straight, flat back, a short, thick head, and short, heavy neck, well folded and heavy flanks, with folds back of the shoulder, and in front of and at the flank, and the hips being well filled up so as to give apparent straightness to the hind legs standing wide—legs being nearly perpendicular on hoofs, as nearly like a deer's as possible; bright eyes, wide apart, thick ears, covered with short, glossy hair, as also the nose, from a line with the eyes; a thick, unctuous skin, yet soft and pliable, without any cords, as on Silesian sheep, also great docility. And now as to the fleece—fineness, such as is termed XX, may be regarded as too fine for a rule, but should not be below X in quality, and as to quantity, there cannot be a rule, but it can be grown to average 2½ to 3 inches, and yet be sufficiently dense, and ought to be evenly over the body of the sheep, without long, coarse or jar hair—a regular curvature, have good tenacity, elasticity, flexibility, softness, integrity or trueness, white color, having good gloss, and having sufficiency of yolk (or oil), so called, to protect the wool on the surface; in regard to the covering of the legs, there should only be as little space not covered with comparatively good wool as will comport with the free movement of the limbs; ewes, hornless, and the horns of rams wide enough from the jaws to admit the points of the shears for shearing. Many of the high-bred rams of the present are too close horned. If the growers of Merino wool, and the growers of long-wools and mutton severally, agree as to standard points in the different kinds, and have standard points as rules of judgment for awarding premiums, we presume advantages would result to all concerned.

I infer, from remarks of Mr. T. S. Humrickhouse in last year's report on sheep, that there has been a scale of points adopted by the sheep breeders' association, but not having seen a register, am entirely ignorant of them. I have objections to the manner of admission to the registry, having received a circular some time since from the secretary giving a statement of the mode of admission. Believing there are many sheep not registered, equally as good as those registered, and that mine would not be one particle better after being registered than before it, I did not choose to pay the costs for that purpose.

We need protection from the general government in order to success, in raising any kind of wool profitably, or else we must secure more friendly relations with the manufacturers of woolens, who have appeared, for some years past, to regard the wool-growers as their most malignant enemies.

Contrary to the assertions of manufacturing associations, it has been proven that the United States—yes, that the State of Ohio—has produced as fine wools as can be produced in any country on the globe; and what it has done it can do again in that regard, if remuneration be made for so doing.

Hoping that you will not regard me as dictatorial in the suggestions which have been made, that you will excuse faults or defects in the work assigned to me, and that some good may result to sheep-breeders especially, and that you will accept this report, it is most respectfully submitted.

NOTE.—Of those having entries but not receiving awards by the committee—there were several whose names have not been mentioned—having stock of the same kind and characteristics as that of Wm. L. Archer, W. A. Herriott, J. M. Miller, and Jas. Glass, of Washington county, Pa., viz.: H. P. Sellers and S. F. Weller, of New Lexington, Ohio, who bid fair to become close competitors with our Pennsylvania neighbors mentioned, together with another Pennsylvania firm, who has not been named in our report, but having sheep of the best quality, viz., the Bailey Bros. Ohio may well be proud of her own exhibiters, a list of whom is as follows: S. S. Campbell and S. Campbell, Cadiz; George Curry, Croton; Albert Quigley, Cadiz; W. J. Emmons, Kenton; J. N. Wright, Johnstown; A. M. & L. C. Tyler, Alexandria; S. F. Weller, H. P. Sellers, William H. Yeazel, Springfield; Copper & McFarland, E. J. Hiatt & Bros., J. G. Blue, Cardington; S. T. Porter, Cadiz; Alex. McCalmont, of Pa.; J. D. Cherbino, of Vt.

REPORT UPON THE SWINE EXHIBIT—BY JOHN M. MILLIKIN.

I respectfully submit the following as my report of the work done by your committees, appointed to award premiums on swine exhibited at your Fair, held in Columbus, in September, 1878.

The new classification of the several breeds of swine, as correctly given in your premium list, gave entire satisfaction to exhibiters. They had no difficulty in deciding the class to which their hogs belonged, and consequently no exhibiter found himself in trouble because of an improper entry.

The number of hogs exhibited was unusually large, even larger than in 1877. The precise number on exhibition cannot be given, as some animals were entered for more than one premium. There were about eighty head of Chester Whites, eighty head of Poland Chinas, and ninety head of Berkshires.

In quality, as well as in numbers, they have never been equaled at any exhibition of swine held in Ohio. The friends of the several breeds represented ought to be entirely satisfied with the character of the animals shown. Each of the three breeds above named had as good specimens as could well be found. There were no other breeds represented, although it is believed that there are good specimens of the Essex and Suffolk breeds to be found in Ohio. The Essex breed is highly esteemed in some States as possessing many excellent qualities. Especially are they valued for their fine fattening qualites and their early maturity.

The committee appointed to pass upon the animals entered in the several classes, consisting of Charles McCormick, of Vinton county; Luke Bradley, of Butler county, and John H. Benson, of Morrow county, met on Tuesday, the 10th of September, and proceeded to the examination of Chester Whites, according to the prescribed order of exhibition.

Book No. 36—Chester Whites.—Two year old boars were first. There were only four entries. They were all fair, well-bred animals. They gave good indications of judicious breeding, and of vigorous constitutions. The first premium was awarded to that veteran breeder of Chester Whites, S. H. Todd, of Wakeman, O. The second premium was awarded to Geo. W. Bittinger, of Plymouth, O.

For premiums on boars over one and under two years, there were five competitors.

After due examination, the committee did a very proper thing—to be done in many cases—they gave both the first and second premiums to S. H. Todd.

Eleven boars, under one year old, contested for the premiums offered. Many of them were good, and some of them extra fine. The first premium was awarded to Mr. E. R. Moody, of Kentucky, who exhibited a very large number of Chester Whites. They had been well bred and properly handled, and they elicited commendations for their good qualities and attractive appearance. The second premium was awarded to Geo. W. Bittinger, for a very smooth and well-proportioned pig.

Sows over two years old were next in order. There were seven entries made. I noted, at the time, that two of them "were very inferior;" that two others were "large and coarse." The other three were spoken of as follows: One was put down as "a very compact, broad, well-built sow, of fine proportions and appearance;" another was described as "extra large and fine," and the third as "excellent in quality, but not superior to the other two." The committee awarded the first premium to E. R. Moody, of Kentucky, and the second to S. H. Todd.

Of sows one year old and under two, there were eleven competitors. One exhibiter showed four, which I noted as "substantial, good sows, but not extra fine in quality." Another showed two that were "extra fine." S. H. Todd won the first premium, and G. W. Bittinger the second.

Sows under one year old, contesting for the premiums, numbered eleven also. Some of them were extra in quality, and in splendid condition for show. The first premium was awarded to E. R. Moody, of Kentucky, and the second to E. M. Stephenson, of Pennsylvania. Ohio was beaten this time by non-residents.

Sows with litters of pigs were next examined. Eight entries had been made, but all were not forthcoming. Some of the sows, as well as their pigs, were extra fine, and gave evidence of not only judicious breeding, but of great care and skill in their preparation for the exhibition. The first premium was awarded to S. H. Todd, and the second to E. R. Moody.

This concluded the labors of the committee for Tuesday. I must be permitted to say that the committee was composed of gentlemen who were competent, careful, and discriminating, nevertheless, I fear they, in one instance, exposed themselves to some kindly criticism. The decisions of the committee were generally made with great unanimity, and in accordance with my own hasty judgments. In one case, however, I fear that the majority of the committee permitted their sympathies to overcome their judgments. Their sympathies were creditable to them as men, but should not have been permitted to control their decisions as committeemen. If men do make most egregious mistakes in passing upon the merits of their own stock, they must suffer whatever of disappointment or loss that shall follow. They will, in the future, be more careful and more prudent in competing for premiums.

In the class of Chester Whites, it is somewhat singular that the large number exhibited were owned by four gentlemen. Two of them reside in this State, one in Pennsylvania, and one in Kentucky. The Chester White men of other States showed a good deal of pluck in coming so far to compete with our Ohio breeders. They showed, too, an enterprising spirit, as the representatives of that breed, which it might be well for the friends of our Ohio breed to imitate.

POLAND-CHINA.

In pursuance of the announced order of exhibition, the committee proceeded to examine and pass upon the Poland-Chinas entered for premiums as per Book 34.

John H. Benson, of the regular committee, being absent, the member in charge, B. W. Carlisle, appointed Dr. Black, of Pickaway county, to fill the vacancy in the committee.

Thereupon, the committee proceeded with promptness to the discharge of the duties assigned.

Boars over two years old, of which there were six entries, were to be passed upon first. These animals were remarkably uniform in quality, and were in extra fine condition for making an attractive show. To say which was the best, all things considered, and which was the next best, was an exceedingly difficult task. As to substantial qualities, there was but little difference. The symmetry, the style of the hog, and the taste of each committeeman controlled the decision of the committee. The first premium was awarded to Mr. J. Douthett, of Xenia, and the second to Messrs. E. & J. M. Klever, of Bloomingsburg, in Fayette county.

Boars over one year and under two were only five in number. They were extra fine in quality. The first premium was awarded to Messrs. Klevers, and the second to Messrs. Robinson & Kinder, of Troy, Ohio. It is a little singular that Mr. Robinson was raised in the county of Warren, in the very neighborhood where the early breeders of swine had so much to do in the formation and maturing of the very breed he was exhibiting.

For the premiums for boars under one year old, there were ten competitors. They were exceedingly stylish, well-bred pigs. After a very critical and thorough examination, the committee awarded the first premium to Messrs. Klevers, and the second premium to Mr. J. Douthett.

Sows over two years old were next to be examined. There were eight entries. This contest was exciting, as all the sows shown were first-class animals, very attractive and stylish in form, and exhibited in the best possible condition. Messrs. Klevers exhibited three very superior sows, one of which was deemed superior to all others exhibited. To them the first premium was awarded. The second premium was awarded to J. C. Chamberlain, of Troy, Miami county, for a very stylish sow exhibited by him.

Of sows over one and under two years old there were only six entries. The first premium was awarded to Messrs. Robinson & Kinder for their very stylish, attractive young sow. The second premium was given to Messrs. Klevers for a sow of fine qualities, and but little inferior to the sow that won the first prize.

There were eight sows under one year old that were claiming the honors of the ring. They were all finely bred, showing every highly esteemed quality in young sows. Messrs. Klevers won the first premium, while the second was awarded to G. W. Stalter for a very large young sow, which possessed many very excellent qualities.

For the premium for the best sow, with litter of pigs, there was a sharp contest. Six entries had been made, which imposed upon the committee the laborious duty of examining, with unusual care, from forty-two to forty-four head of hogs, in order that they should be prepared to make an intelligent and acceptable award. The committee was altogether equal to the emergency. After due attention the committee awarded the first premium to Messrs. Klevers, and second to Messrs. Robinson & Kinder.

Thus the work of the committee on Poland-Chinas was finished. The committee worked with great dispatch and the awards were arrived at with great unanimity. It is hoped that, in all like committees, men of like good qualities may be selected, who will be able to discharge the duties assigned them with like intelligence and ability.

The work thus far performed had been without any interruption from rain. The threatening clouds, however, gave unmistakable indications that the impending storm would soon commence. The committee had worked with unusual industry, so that they might perform all the duties assigned them before their work should be interrupted by rain.

Promptly at half-past one o'clock the committee met to conclude their work. Mr. Benson, of the regular committee, made his appearance, and thereupon Dr. Black retired. His services had been entirely acceptable to the members of the committee, and had given satisfaction to exhibiters.

BERKSHIRES

Were next to be examined, and awards made.

Boars two years old, to the number of four, had been duly entered. They were generally fine specimens of that breed, compact, smooth, and vigorous. The first premium was awarded to William Fulk, of Ashland county, and the second premium to A. Ware, of Fayette county.

Boars over one year and under two were generally of exceeding good quality. There were only six competitors. The first premium was given to John H. Roe & Co., of Licking county, and the second premium to A. Ware, for a very smooth pig.

Boars under one year old were exhibited in great numbers. There were fourteen competing for the premiums. Some of them were exceedingly stylish in form. Mr. Ware, in this class, seemed to be gaining on his competitors. In the two previous classes he had been compelled to put up with second premiums. In this show he contended for both the first and second premiums, which were ungrudgingly awarded to him by the committee.

Of sows two years old, there were eight very anxious competitors. The animals exhibited were all first class, and appeared in the best possible condition. A. Ware was fortunate in winning the first premium, while D. W. Todd, of Urbana, obtained the second.

Sows over one year and under two that competed for premiums numbered eight. The contest for superiority was very close. The first premium was awarded to W. L. Mallow for a very attractive sow, and the second was given to D. A. Peterson.

Of sows under one year old, there were fifteen that competed for the premiums offered. There were many extra nice specimens of young Berkshire sows. In this ring D. W. Todd was successful in getting the first premium, while the second was awarded to W. L. Mallow.

Sows with litters of pigs were next examined by the committee. Seven entries had been made, but only four sows with their pigs actually competed for the premiums offered. After a very critical examination of these sows and their well kept progeny, the committee felt constrained to give the first premium to A. Ware, and the second to D. A. Peterson.

This ended the labors of the regular committee. It had given diligent attention to the proper discharge of the duties imposed upon it, and was quite satisfied in being relieved from further service. The committee therefore adjourned without day.

SWEEPSTAKES ON SWINE.

A new committee to pass on animals entered for sweepstakes was regularly constituted. It was composed of the following gentlemen: Z. H. Perrell, of Pickaway county; Dill Wiegand, of South Bloomfield, and W. S. Shrum, of Franklin county.

At half past one o'clock, on Wednesday, the 11th, the committee organized and proceeded to the discharge of its duties.

Boars of any age or breed were first to be passed upon. Eight entries had been made, and eight animals were exhibited. After a very careful examination had been made of all the competing animals, the committee awarded the premium to J. C Chamberlain, of Troy, Ohio.

The rain seriously interfering with the business of the committee, it adjourned until the next day, when, under like unfavorable circumstances, the said committee resumed its labors.

The next class in order was sows of any age or breed. There were many excellent animals exhibited for this sweepstake premium. A finer show of exceedingly attractive and valuable animals has never been witnessed in Ohio. The award was duly made to Messrs. Klevers, for their sow over two years old.

The premium proffered for the best fat hog was awarded to S. H. Todd. There were but few competitors, owing, doubtless, to the risk that has to be incurred in transporting very fat hogs. This premium fat hog was a Chester White, raised and fattened by Mr. Todd, who is a veteran in breeding, fattening, and showing Chester White hogs.

HERD OF POLAND CHINAS.

For this and other herds in the swine department, diplomas only are offered. There were but two competitors in this sweepstakes class. After giving due attention to their merits, the committee decided that the Messrs. Klevers were entitled to the diploma.

HERD OF CHESTER WHITES.

There were five entries made for the diploma. The committee awarded the diploma to S. H. Todd, for his excellent herd, always exhibited in the best possible condition.

BERKSHIRE HERD.

There was an unusual number of entries made in this class—six in all. The committee awarded the diploma to A. Ware, of Fayette county.

The committee having now completed the task assigned to it, the labors in passing upon the animals exhibited in the swine department were fully concluded.

The exhibition of swine, as particularly described above, was most excellent in quality, and quite sufficient in numbers It was not only creditable to the State, but to the exhibiters who had taken so much pains in preparing their stock for exhibition.

There were only three breeds represented—the Berkshires, the Poland Chinas, and the Chester Whites. Although premiums had been offered for other breeds, no one seemed inclined to make an exhibition of their stock. The number of animals belonging to other breeds is believed to be very small in Ohio. In some States the Essex breed of swine has been highly esteemed. In this State, however, there are but few persons who have given special attention to the breeding of this hog, which is very highly valued for its easy keeping qualities.

In reference to the amount of premiums offered and paid for swine, as compared with the premiums offered for other domestic animals, I beg to inquire of the Board whether other animals are not receiving higher premiums in proportion to their value than are given to swine?

I take it to be an undisputed fact that more money is annually received for hogs sold by the farmers of Ohio, than they receive on the sale of any other one kind of domestic animal. Especially is this prominently true as between swine and sheep. The aggregate sales for pork largely exceed the amount received for both sheep and wool. If this statement is true, then swine are of more importance to the farmer than sheep. They have a deeper and more lively interest, therefore, in everything connected with the improvement of the several breeds of swine, than in the improvement of sheep husbandry. Are the premiums offered in proportion to the relative producing capacity of these classes of animals? Let us see:

Premiums paid in 1877 on sheep was	$744 00
Premiums to be paid in 1878 on sheep is	749 00
Total for two years	$1,493 00
Premiums paid in 1877 on swine	$805 00
Premiums to be paid in 1878 on swine	686 00
Total	$1,491 00

Thus it appears that the aggregate for the past two years is substantially the same, notwithstanding the superior money producing power of the swinish multitude.

The particular friends of the sheep interests in Ohio have been becomingly vigilant in watching the premium list to see that sheep husbandry is not neglected. They have seen to it that three premiums are offered for single animals in the Merino class. For a ram two years old and over, there is a first, a second, and a third premium, amounting in all to sixty-five dollars. So for rams under two years, and ram lambs. The total sum offered for the three rams amounts to one hundred and sixty dollars. Then they have sweepstakes on Merinos and on Longwools, giving first and second premiums. This is an anomaly. In sweepstakes for horses, excepting in speed, where the premium is divided, there is but a single premium for the best horse or best mare of any age or breed. So in sweepstakes on cattle, no second premiums; so, too, on hogs, only a single money premium is offered for the best boar or the best sow.

There is another discrimination against swine in favor of sheep that furnishes further evidence that the astute sheep men have pulled wool over the eyes of somebody. For instance, on sweepstakes for sheep, premiums are offered to the sum of $160, while the sweepstake premiums for hogs amount to the sum of $65. To compensate the exhibiters of swine, who run greater risks in the transportation of their stock, and in some degree to make amends to the swine breeders for seeming injustice done to them, your Board have been considerate and kind in offering *diplomas* to the exhibiters of herds of swine *instead of money*. They having made no such offer to the exhibiters of either *sheep*, *cattle*, or *horses*, it is fair to presume that this discrimination was intended as a compliment to swine breeders. They were considered less *sordid* than others who exhibited other kinds of domestic amimals, therefore they gave them *diplomas* instead of *filthy lucre*, as a reward of merit for their public spirit in bringing their herds to the exhibition, for the great gratification of the public.

I am aware how easy it is for such mistakes to creep into a premium list, without any very culpable neglect on the part of any member of your Board. Our good friends who are having their attention constantly directed to the protection of the interests of sheep husbandry, are in no sense responsible for the inequalities complained of. They are always vigilant, and should have their reward. In the aggregate the premiums proffered them are not too large. Swine breeders will surely not insist upon any reduction of the gross amount of premiums offered them. They do ask, however, that in proportion to the importance of the interest they represent, so should the premiums on swine be increased. They ask further, that if third premiums are proper—which they controvert—that they shall be generally offered, and that premiums for domestic animals shall be paid in the same kind of currency, whether it shall be greenbacks, the notes of national banks, silver, gold, or diplomas. Make no invidious distinctions.

To the member in charge, B. W. Carlisle, and to Abraham Flick, Superintendent, your committees and your reporter make their acknowledgments for prompt and kindly attentions shown them while engaged in the performance of their duties.

All of which is respectfully submitted.

REPORTS FROM COUNTY SOCIETIES.

ALLEN COUNTY.

The agricultural society held its sixteenth annual fair at Lima, on the 1st, 2d, 3d, and 4th days of October, 1878, and was in every respect the best fair ever held in the county. The exhibition in every department was far ahead of any former year. The show of horses was creditable. Cattle, especially Shorthorns, would have compared favorably with older counties. The show of hogs was large and fine. There were no entries made on field crops. The society numbers 146 members this year. The number of entries made was 1,275. The society received from all sources $1,961.59, and paid for premiums $851.50, besides the current expenses incident to holding the fair and the building of more substantial buildings. The principal crops raised in the county are wheat, corn, oats, flaxseed, cloverseed, potatoes, and fruits. The wheat crop was the largest ever raised in the county, would average 25 bushels per acre; corn hardly an average; oats good; clover and flaxseed fair crop; fruits (apples) abundant, but matured early, not keeping well; potatoes not half a crop. Season very wet.

As for the outlook and usefulness of our society, we feel greatly encouraged by the feeling and interest manifested by the best class of our citizens.

ASHTABULA COUNTY.

The principal crops of this county are corn, oats, wheat, potatoes, and hay. This is a dairy county, butter and cheese being largely produced. Probably about 130,000 bushels of wheat, 600,000 bushels of oats, 700,000 bushels of corn, 130,000 bushels potatoes, and 80,000 tons of hay were produced in 1878. Potatoes 35 bushels, corn 50 bushels, wheat 25 bushels, oats 35 bushels, and hay one ton per acre, about the average yield. Grasshoppers did some injury. Potatoes rotted badly. Our society is improving in its condition, influence, and usefulness every year.

ATHENS COUNTY.

The past season in Athens county has been all that could be desired by farmers. The wheat crop was good, the yield not large but the wheat very heavy, and turned out beyond the expectations of farmers.

Corn was more than an average crop; some complaint was made by farmers that the corn did not ripen well on account of early frost, yet there is plenty. The oats crop was rather poor, being damaged by drouth in May and June. Hay on bottom lands was very heavy, hill lands lighter but made a very fair average yield. Hay selling at from $6 to $8 per ton.

The farmers of Athens county are turning their attention to the raising of sheep within the last few years. Last year there was owned in the county about 60,000 sheep, from which there was shorn over 400,000 pounds of wool, which sold at an average of about 33 cents per pound.

Horses and cattle are receiving more attention than in former years, the latter receiving several premiums at the State Fair last year.

The surface of our county is varied. We have plains, valleys, and hills. The hill land is a rich mucky soil generally, very productive of corn, wheat, and grass, and particularly adapted to grazing. The valleys are rich and sandy soil. The hills are rich with minerals. Coal, iron ore, limestone, and petroleum oil are in abundance. There are now in active operation 25 coal mines in the county, employing over 600 men. The Bessemer Furnace is now making from 30 to 35 tons of iron every 24 hours, and employing about 150 men. The petroleum wells are not doing much now.

Our hills were once well timbered, but the forests are rapidly melting away before the woodman's ax. In the last five years at least ten per cent. of the timber land in the county has been cleared. Our principal timbers are white oak, red oak, black oak, hickory, poplar, elm, walnut, ash, chestnut oak, chestnut, sycamore, beech, gum, dogwood, sugar maple, buckeye, cherry, ironwood, etc.

The condition of our agricultural society is good. We are out of debt, own twenty-eight acres of ground under good fence, with a very fine half-mile track. The buildings are not good, but we are in condition now to build.

AUGLAIZE COUNTY.

The principal crops in Auglaize county are wheat, corn, oats, barley, rye, and potatoes. Yield per acre, 20, 35, 40, 35, 15, and 100 bushels respectively. There was a greater acreage of wheat, corn, and potatoes than in 1877, but I cannot make an accurate estimate. I could take the compiled returns that the Auditor of State has, for last year, and add a per cent.

This was a very wet year in comparison to last, which materially reduces the corn crop. We had no destructive insects this year.

The condition of our society is prosperous, members and others taking a greater interest each year. This year, on account of weather and sickness in our county at time of fair, we did not succeed well financially, but will enter the field again with renewed energy.

BELMONT COUNTY.

In accordance with the law requiring of county societies a written report of the condition of agriculture in the several counties of the State during the past season, I submit the following statement of the principal crops raised, an estimate of the amount of each, the average yield per acre, the characteristics of the previous season, destructive insects, and other details concerning agriculture in this county, as specified in your circular of November 7th, 1878.

Our principal crops are wheat, oats, corn, hay, and potatoes. We also raise considerable quantities of barley, tobacco, sorghum, and buckwheat. From the best data I can get, I would estimate the amount of each raised as folllows: Of wheat, at least two hundred and fifty thousand bushels; oats about the same quantity; corn, one million two hundred thousand bushels; hay, thirty five thousand tons; potatoes, one hundred and fifty thousand bushels; barley, four thousand bushels; rye, ten thousand bushels; tobacco, one and a half million pounds; sorghum syrup, thirty thousand gallons, and buckwheat, about two thousand five hundred bushels. The average yield per acre I estimate as follows: Wheat, twelve and one-half bushels; oats, twenty-five bushels; corn, thirty-five bushels; hay, one and one-quarter tons; potatoes, one hundred and fifteen bushels; barley, twenty bushels; rye, ten bushels; tobacco, one thousand pounds; sorghum syrup, one hundred gallons, and buckwheat, fifteen bushels.

We also produce about eight hundred thousand pounds of butter, one thousand pounds of cheese, fifteen hundred pounds of maple sugar, fifteen hundred bushels of sweet potatoes, sixty thousand pounds of grapes, and about thirty-five thousand pounds of honey.

Considerable quantities of clover and timothy seed are produced in our county—perhaps eight hundred or a thousand bushels of each.

Regarding the striking characteristics of the past season, little is to be said. Our spring was late, and was followed by dry weather during the early summer, which, to some extent, injured the oats and hay crops. In some parts of the county the crops and fruit were considerably injured by hail in the early part of May. The autumn has been favorable for maturing the crops and for gathering, which has been done with little loss.

With respect to destructive insects, our farmers seem to have been favored the past year, as little or no complaint is made about them.

A large amount of ground has been sown in wheat this fall, indicating that the farmers are satisfied with the returns in that department for the past two seasons, and desire to continue them.

No premium crops were entered for competition at our fair for this year.

The general condition of our Society is good, and the future prospects very hopeful. Our last annual fair was a great success, both in the character of the exhibition in all departments, and in the exceptionally large attendance of visitors and exhibiters. A marked increase of interest was manifested by all classes. The number of entries made was about thirty-three per cent. greater than for many years past. All the classes, with one or two exceptions, were filled, and a larger amount of premiums awarded than ever before. This was notably the case in regard to live stock and articles of domestic manufacture.

BROWN COUNTY.

The past season has been above the average, as compared to ordinary years. All crops, except the corn crop, have been unusually fine, and even the corn crop is quite a good one in some parts of the county. In the southern portion, upon the hill-lands along the Ohio river, the crop was injured to some extent by the dry weather during the month of August. But the average yield for the entire county will probably not be much below that of former years. The average acreage will doubtless be greater than usual.

Owing to an uncommonly early spring, the oat crop was sown quite early, and the crop was a most excellent one, both in quantity and quality of grain. The average yield per acre will be above ordinary years, although the average acreage will possibly fall a little below other years.

The tobacco crop is a very good one; the yield per acre this year is not so heavy as it has been in previous years, nor is the acreage so large, yet the crop was very fine in quality. This crop has decreased chiefly on account of the decline in price, yet many farmers still raise large crops of tobacco, claiming that it is a profitable crop to raise, notwithstanding the depreciating prices of the present times.

The wheat crop far surpasses any for many years—all the conditions of season having been most favorable to it during the winter, spring, and summer. The average acreage was much greater than for many years past, and the yield per acre has very largely increased, and it has improved the energies of our farmers to such an extent in wheat-growing, that very large crops have been sown for the coming year.

Irish potatoes are not a very heavy yield on early varieties, but on late varieties the yield is very heavy, and, upon the whole, the crop is fully up to an average.

Garden vegetables are generally good and quite plentiful.

Insects have not been seriously destructive at any time during the year.

Our Society has been reasonably prosperous during the past year, although laboring under some disadvantages. Our fair began September 10th, 1878, but the weather was quite wet, raining almost constantly, and it was deemed expedient by the Board, after the first day's show, to postpone the fair until October 2d, 1878. By so doing, we were favored with three days of fine weather for the completion of our fair. The attendance was very large, and the show in every department was far beyond anything in the past history of the Society, the whole number of entries being about one thousand in excess of any previous fair. While the postponement added at least one hundred dollars additional expense to our Society, yet the Society has paid all premiums in full, and all other expenses of the fair, and has paid over four hundred dollars for permanent improvements on the fair-grounds during the present year. The Society's indebtedness, which accrued from purchasing additional land for fair-grounds and improving same, is now only about one-half of what it was two years ago. So that, with reasonable success for the next two years to come, we have every reason to hope that our Society will be entirely free from debt.

On field crops we failed to secure any competition. Strange to say, that while our Society offers a full list of liberal premiums on field crops, yet not a single entry was made at our last fair in that class.

Our stock show at last fair was unusually fine, embracing some of the finest stock of both Ohio and Kentucky.

The departments in the hall were generally full to overflowing, and the articles were of superior merit, and it is to be regretted that very many highly meritorious articles failed to receive premiums on account of the great competition.

And in conclusion, we have high hopes of the benefical results that our Society seems to be exerting over the agricultural, stock-raising, mechanical, and art-improving industries of our county.

BUTLER COUNTY.

In pursuance of the rules and regulations prescribed by the State Board of Agriculture, I herewith furnish a list of the principal crops raised in Butler county, Ohio, and an estimate of the amounts of each crop raised, the average yield per acre for the present year, the striking characteristics of the past season, etc.

The principal crops raised are—

1st. Corn.—Amount raised, 3,500,000 bushels; average per acre, 45 bushels.

2d. Wheat.—Amount raised, 550,000 bushels; average per acre, 16 bushels.

3d. Barley.—Amount raised, 540,000 bushels; average per acre, 45 bushels.

Oats and potatoes are raised in certain localities, and in certain kinds of soil produce large yields, but are not generally raised as a staple crop, but only for domestic use and our home market.

The most striking characteristic of the past season was the backward, cold, and unfavorable weather in early spring, killing the fruit and injuring the wheat and barley to such extent that in some parts of the county many fields of barley were plowed up and planted in corn; and the continued coldness of the season after corn planting caused the crop to be backward in growth, and promised a failure of that crop. The summer set in very favorably for the wheat and barley, and continued favorable for corn late in the season, giving full time to mature; and although in some seasons more particularly favorable to some particular kinds of crops there may have been larger yields, yet we have never, perhaps, had in Butler county a more favorable season for all kinds of crops, or ever had so large an average yield of cereals and all kinds of roots, vegetables, etc.

The same old pest, the potato bug, was still abroad in the land; but the growth of the potato was, for the past season, so rapid and vigorous that its ravages were not so injurious to that crop, or, at least, was not so perceptible as in former years. The midge, in some parts of the county, done some injury to the wheat, but only to a limited extent.

From the accompanying report of the entries and premiums offered and awarded on articles of manufactures, machinery, stock, etc., and of the receipts and expenditures, it will be seen that the society, in all its various departments, is in the most encouraging and flourishing condition; and if its past progress can be any test of its future prosperity and success, it must still continue to receive, in a still increasing progression, the encouragement and support of the agricultural, mechanical, and manufacturing interests of this and the adjoining counties of Ohio, Indiana, and Kentucky.

CARROLL COUNTY.

The board of managers of the Carroll County Agricultural Society beg leave to make this, their twenty-eighth annual report.

We have reason to congratulate ourselves on the prospect of the increased prosperity and usefulness of the society. Our annual fair was held on the 9th, 10th, and 11th days of October, 1878. The weather was good, and the attendance very large for our county. The fair was a decided success in every respect.

The show of stock was good. There were more entries of stock this year, and we think we can safely say, very much better stock than has ever been shown at our county fairs. The show of vegetables, fruits, and domestic manufacture was not quite so large as former years, but was of a better quality. The receipts this year from all sources was over $2,500—larger than has been for many years. The number of members of the society is about five hundred. We flatter ourselves with the prospect that in another year we will be enabled to pay off our indebtedness, have our ground and buildings clear of debt, and be thereby the better enabled to give larger premiums, and more extensive in variety than formerly.

The principal crops raised in this county are wheat, corn, oats, and barley. Wheat was a very good crop. Whilst the yield per acre was not quite so large as was anticipated before harvest, it was very much above the average. The oats crop was very good. The corn crop was fair, but was injured considerably by the dry weather of July and August.

CHAMPAIGN COUNTY.

The general condition of the county society remains as during the past eight or ten years—without material change—but certainly with great opportunities for good. The last annual exhibit of agricultural products and machinery corresponded most favorably with any preceding fair. The exhibit of cattle was good, but the number on exhibition was small; other stock well represented in quality and number. The claptrap usually resorted to to draw a crewd made little part of the fair. The attendance was smaller than usual, which is accounted for on the facts that at the time malarious diseases were prevailing very greatly over the county, and in consequence of the unusually hot weather for the season of the year, many farmers were engaged in sowing their winter wheat.

The crops principally raised in this county are corn, wheat, oats, barley, rye, timothy, and clover hay as leading crops, and buckwheat, clover seed, broom corn, potatoes, etc., to a less extent, as part of a mixed husbandry. Horses, cattle, hogs, and sheep also receive considerable attention; but it is doubtful whether the county has as many well-bred cattle as it contained twenty to twenty-five years ago. Few fairs can turn out as fine a display of horses. In swine raising, the Berkshire and Poland-China take precedence, and about equally divide the number engaged in this crop.

The crops generally have been good—the corn unusually so. The growing season was propitious to the labors of the husbandman, and prices rule low. We have no means of knowing the aggregate or average yield per acre, except through the reports of the auditor's office. The present prices of farm produce demonstrate that the farmer must add to the amount to be raised from a given space, or fail, as compared with other industries. There is, consequently, a disposition generally prevalent to attain a higher farming—that is, better results with less expense—and the results of the year will show an increased average generally.

The insects particularly injurious were the Colorado potato beetle, the cabbage worm, the currant worm, and the canker worm. No general efforts have been made to destroy these pests. The Hessian fly has done considerable damage, but late sowing and pasturage with sheep are commonly considered and practiced as giving protection.

1878 has also been the fruit year, and enormous quantities of apples, pears, plums, and cherries were grown. Peaches tolerably abundant. For the first time in years the plum and cherry were uninjured, or but partially hurt by the curculio.

CLARKE COUNTY.

The twenty-sixth annual fair of the Clarke County Agricultural Society was held at their fair grounds at Springfield, August 20, 21, 22, and 23, 1878. The weather fine, a large attendance of the real agriculturists of the county, thereby making the fair a success. After paying the premiums in full there was left in the treasury $253.30. The total number of entries was 1,712; amount offered for premiums, $3,109; amount awarded, $2,205. This is conclusive evidence that old Clarke is still wide awake in the interest of agriculture. Forty-eight entries in the Shorthorn class plainly show that the breeders in Clarke of that exeellent breed of cattle have not been carried away with the corners gotten up by a few fancy breeders, who breed from certain tribes that have been bred in a certain line, but have kept steadily breeding to the Shorthorns, that have proven themselves to be excellent in beef and milking qualities, also healthy and prolific. The interest is largely on the increase, as the number of herds shown at the last fair proves. There was a good show of Devons, hardly excelled at the State Fair, and a pretty fair sample of Alderneys, Ayrshires, and Holsteins on exhibition. The show of horses was good. One need not go out of Clarke to see a good sample of the thoroughbred, roadster, draft, or general purpose horse, as they are here nearly in perfection, and always on hand at our fairs. The speed department was well contested, keeping the audience late each day. A fair show of fine-wool, Southdown, and long-wool sheep. A very fine show of swine, especially Poland-China and Berkshire. One of the largest and best exhibitions of poultry that has been exhibited in the State this year. Mechanic arts well represented. Springfield mechanics are always on hand at the fairs to show their skill and handiwork. They cannot be excelled in the State. They are alive to the interests and success of Clarke County Agricultural Society, asking for no premiums, only asking for space to show their manufactures of various kinds against the world. Farm product department, 189 entries; a very good show. Fine arts a fair show. Textile fabrics, 127 entries; a grand display. The ladies of Clarke are always on hand at our annual fairs with their handy and fancy work, and make one of the most attractive features at the fair. They say, keep up the fair; we will do our part (as they surely do); the entries on the books so testify. Horticulture and floriculture were well represented by professional and amateur growers of Clarke county, who had several varieties of flowers on exhibition. In short, our fair was a grand success.

As to the crops of Clarke county, cannot give you very reliable and satisfactory answers to your circular; will do the best I can, from last year as a starting point. Wheat, more acres than last year; an excellent crop; yield the best for many years; twenty-one bushels per acre. Rye, about the same as last year. Buckwheat, not more than three-fourths as many acres or yield per acre. Oats, more acres sown, but not more than three-fourths as much per acre. Barley, one-fourth better; about same quantity of acres. Corn, more acres, but one-fourth less per acre. Meadow hay, one-fourth more. Clover hay, one-fourth more. Flax, one fourth less. Potatoes, one-half less. Butter, ten per cent. more. Cheese, same as last year. Sorghum molasses, one-fourth less; not profitable. Orchards good, three times as much as last year. Wool, same as last year.

The season was an excellent one for grasses and most kinds of vegetables; not good for late potatoes, and cabbages nearly a failure—destroyed by a worm. Some hog cholera in the southern part of the county, but nothing compared to last year. Worth $2.50 per hundred. Produce of all kinds rating very low.

CLERMONT COUNTY.

This county held its thirtieth annual exhibition on the grounds of the society at New Boston, September 3, 4, 5, and 6. The weather was fair, and the show the largest ever made in the county. The principal crops are hay, corn, oats, wheat, potatoes, rye, apples, pears, grapes, and berries. There is also a growing interest in the breeding of live stock. The soil and physical condition of the county are so varied that we grow a greater variety of crops than is common to most counties in the State. The year has been very seasonable, and we think the crops have generally been up to the average. There was but one competitor on field crops. Destructive insects scarcely made their appearance except in the case of Colorado potato bugs and cabbage worms—the latter destroying almost the entire crop. The society is in a prosperous condition, out of debt, except bonds on the society which secure permanent membership to about one hundred persons.

CLINTON COUNTY.

The principal crops are corn, wheat, oats, and potatoes. There are many other things raised, and with profit. The corn crop for the year 1878 averaged about forty bushels per acre. It was not first rate, there being a drouth just at the time that prevented it from filling out so well as in some years. It lacks about one-fifth in quality and quantity. The wheat crop for the year averaged about fifteen bushels per acre, and was in quality and quantity better than has been for many years. There was no special trouble to our crops by insects of any kind, except in a few instances the fly in the wheat. This county is troubled with a worm that eats up the cabbage. There is also a worm here that eats all the leaves off the currant bushes. Early potatoes, as a rule, were small, but all in all, there was a fair crop. The farmers of this county are in good spirits, notwithstanding the low price of pork.

On account of the trouble of measuring, weighing, and being qualified to the results of field crops, the farmers will not at our fairs enter into competition thereon.

Our agricultural society is very valuable in being the medium through which good and valuable seed and specimens of agricultural productions are brought to the notice of many of her people; and it is apparent that there is engendered in the hearts of the people a desire to advance themselves by cultivating none but the best of seed and stock. Notwithstanding we are in debt we have had good fairs, and have a prospect for better in the future.

COLUMBIANA COUNTY.

The twenty-ninth annual fair of the Columbiana County Agricultural Society was held at the grounds of the society, in New Lisbon, on the 24th, 25th, and 26th days of September, 1878. The attendance was poor, compared with former years. The second day of the fair was favorable, and a fair crowd present; but the last day was almost a failure, on account of the weather.

The exhibition of cattle was excellent, and certainly was a credit to the farmers of Columbiana county. The stalls were all filled up. There was quite an exhibit of Alderney and Jersey cattle, which was a new addition to our fair. The entire display of cattle was good, showing clearly that our farmers appreciate good stock.

The exhibition of horses, I think, has never been equaled. The grand procession in the ring, on the second day of the fair, was one of the best features of the exhibition.

The display of sheep was very fine, and one that was calculated to fill those interested in this department with pleasure, and one that would be hard to excel.

The same remark could be made of swine. The display was much better than last year, which we then thought could hardly be surpassed.

The display of poultry was far in advance of last year. We have several breeders of fancy poultry in our county, and who seem to be making it pay.

Floral hall was crowded to its utmost capacity with flowers and fruits. A better showing of plants was never seen on the grounds.

The exhibition in agricultural implements was not as good as in former years. The grain and vegetable department was well filled up.

One of the finest exhibits made at our fair this year was that of stone china ware, manufactured at East Liverpool, in this county; it was certainly equal to any imported ware. Columbiana county can well feel proud of her different kinds of manufactured goods.

Quite a number of improvements have been made on our grounds this year, and we are now contemplating making a half-mile track, so as to give the people a better chance of showing their horses.

Our fair this year would have been a success financially, as well as otherwise, had the weather not been so bad on the last day. But notwithstanding this, we paid all our premiums, and only fell short some one hundred and thirty dollars of paying all expenses and interest on debt. We are now laying our plans for having a grand good time on the thirtieth anniversary of the society.

Our crops for the past season have been abundant. I should say fully 25 per cent. more wheat was raised and harvested this year than last. There was some complaint of fly, but it was not general. The oats crop was very heavy, twenty cents a bushel being a fair price for same last fall.

There has been some complaint about potatoes rotting, which is something new, as the like has not occurred for a long number of years. The potato bug, I think, is gradually dying out, although in some sections I have heard considerable complaint.

The hay crop was very heavy, and generally well secured. The amount of all feed is abundant. The result is, all kinds of stock are in fine condition.

The apple and peach crop of this county was abundant. Much attention is also given in this county (especially in the eastern part) to the growing of small fruits, such as grapes, strawberries, and raspberries, and has been very remunerative.

The fall has been very favorable for farm work, and farmers are going into winter quarters in very good condition.

COSHOCTON COUNTY.

The twenty-seventh annual fair of the Coshocton County Agricultural Society was held at Coshocton, Ohio, September 24th, 25th, 26th, and 27th, 1878. The weather during the fair was splendid, and the attendance was large, but not so large as that of last season, owing to the weather being unfavorable for seeding and cutting corn just previous to our fair, thus putting our farmers back with their work, and depriving us of their presence at the exhibition. Nevertheless we are satisfied, our fair being a success financially as well as in all other respects.

Our grounds have been greatly improved by the society; and in making the improvements, in addition to the purchase of the grounds now occupied by the society, a considerable debt was contracted, which has now (owing to the panic and the failure to sell the town lots laid out in the old grounds) become a great burden and hindrance to the society. If the legislators, in their wisdom, would enact a law for the relief of agricultural societies which would not require a submission to the people by ballot, they would confer an everlasting favor upon us and all other societies. The question is often asked, "Why not submit the question to a vote of the people?" I answer, the people—our farmers—do not take enough interest in the subject of agriculture to vote a tax for its encouragement. It is but the few, not the many, that do and have sustained the agricultural societies; and a proposition to levy a tax to pay debts incurred for their good, would meet with a certain and overwhelming defeat.

What shall be done to draw the farmers, as a body, to the support of county fairs. I venture to say, that in no county in this State does over one-half of the farmers take enough interest in agriculture to attend a county fair, and not over one-fifth of those who do attend ever bring anything to exhibit. Why is it that the farmers will neglect that which is to their benefit and interest, and *should* be encouraged by every farmer, be he great or small? Who but the farmer reaps the benefits derived through these societies? Many of our farmers object to the management of these societies, but when they are offered the management, they decline, their excuse generally being too much work and no pay; and still they stand aloof and cry ring, humbug, jobbery, and the like. Some say we have too much racing, whilst others say, "give us more racing and you will have better fairs, and the attendance will be larger." Another class want this, whilst another want that; and some don't know what they do want, except they want to growl—and growl they will, do what you can and will for them. What shall be done to make such men act the part of men?

Our board, composed of live men, devoted much of their time and talent to the interests of the society. The grounds were placed in splendid condition, large premiums offered, and everything done to warrant a good fair. The board anticipated a good fair, and we had it, in spite of the predictions of the professional growlers and fault-finders.

The various classes of live stock were well represented; especially so was the swine department, where the different choice breeds—Berkshire, Chester, Poland, and others—are beginning to show their superior qualities.

The grade class of cattle is looking up; some of our enterprising farmers are making selections from some of the finer breeds, and crossing them with our already greatly improved native stock, making very fine cattle. The show of horses was fully equal to that of last season, both in numbers and quality. The display of sheep was a very fine one. There is a disposition among breeders to look after the finer grades, more than has been in former years. The display of poultry was good, most of the improved varieties were on exhibition, and attracted general attention.

A very attractive spot on the grounds was the agricultural implement space, which was well filled with lately improved farm machinery. This is not so much of a manufacturing county as many of the adjoining counties, consequently, most of the articles on exhibition in this department were from abroad.

The display of fruit, grain, and vegetables, owing somewhat to the favorable season, was very fine and in great abundance. The halls for the display of needle-work, fine arts, jellies, sealed and canned fruits, etc., were well filled. The ladies continue to take an active part in our displays, and contribute abundantly articles of superior merit.

The science of agriculture is developing itself rapidly, and as it becomes more fully understood and acted upon, the results are becoming more manifest every year.

The principal crops raised in our county are wheat, oats, corn, and hay; and the average production per acre of the above crops for the past season is (as near as I can ascertain): Wheat, about 20 bushels; oats, 35; corn, 30, in the ear; hay, one ton. Our corn crop was greatly damaged this season by a heavy wind and rain storm, which passed over this section of the country the latter part of August. Our potato crop falls short of that of last season, owing to the unfavorable season. Our crop of fruits, of all kinds, was very large. Many thousand bushels of apples were allowed to rot on the ground for want of a market.

Stock-raising has become a source of profit to many of our farmers; there are few counties in the State, not purely stock-raising, that does a larger business than ours.

On field crops there were but three entries—two on wheat and one on corn. The com petitor for the crop of corn failed to comply with the rules, and no premium was awarded him.

Our farmers do not take the interest they should in competing for premiums on field crops. If a farmer, by careful preparation of the soil and good culture, succeeds in raising a large crop, he is content in telling his neighbor, or having a local notice in the county papers, and the good that might result to the general public, from a knowledge of culture, etc., is lost, by his failure to compete for a premium, so that the matter would be a subject of record in the proceedings of the society. We believe we are not behind in the general improvements, and attribute much to the holding of fairs, and whilst they are not what they should be, yet they are not without some good effect.

There is a very commendable and praiseworthy zeal manifested on the part of our farmers to improve their stock. Coshocton county has some as fine horses, cattle, sheep, and hogs as there is to be seen in the State. Another remarkable feature is the improvements made in farming. Little by little, and year by year we are improving in the preparation of the ground, selection of seeds, and the cultivation of the land after the seeds are put in the ground. These improvements are not rapid, yet they are all the time growing. A great deal of this growing zeal for good farming is to be attributed to our spirited county fairs. Up to this time, our county, without an exception, has been successful in her fairs, and our last two were remarkably successful, owing a great deal to the fact that everything in the shape of gambling is forbidden, and no intoxicating liquor has been allowed to be sold on the grounds. The natural result is, that good order and good feeling prevails during the entire fair.

We think the continuation of our fairs will bring the manufacturer, producer, and consumer into closer proximity to each other, and is well calculated to promote the interests of the industrial classes and increase the prosperity of our county, and eventually secure great good to all.

An effort will be made during the coming session of the Legislature to secure such legislation as will relieve the society from this debt, contracted in the purchase of their grounds, and should we be successful, we have no fears for the future success of the society; the prospects for the progress and usefulness of the society, in our opinion, could not be better. The people from all sections of the county seem to have taken new life and a new interest in all matters pertaining to the society, and should the season of 1879 be favorable, we doubt not but what the fair of that year will far outstrip all of its predecessors.

CRAWFORD COUNTY.

The principal crops of Crawford county are wheat, oats, corn, hay, and potatoes. There are, of course, other crops raised, such as rye, barley, flaxseed, etc., but they are only incidentally raised to fill in between the main ones just mentioned.

As near as can be estimated, judging by the difference between this year and last, we have about 550,000 bushels of wheat, 725,000 bushels of oats, 1,200,000 bushels of corn, 100,000 bushels of potatoes, and about 40,000 tons of hay, including both clover and timothy. Corn this year will average about 80 bushels ears, oats 25½, wheat 18½, potatoes 125 bushels, and hay about 1½ tons, to the acre.

The Hessian fly injured the wheat probably two per cent. of the whole crop. The cabbage worm, so called by the good people who preside over that rotund vegetable, is becoming a formidable little fellow, and will soon rout out of the county both cabbage and kraut. Potato bugs of both kinds were very modest in their depredations this season, and lastly, the orchard worm—he may have a longer and a harder name to spell and remember, but by this name he will be identified by the owners of orchards which he has visited this year—did us but very little harm. Upon the whole, we may thank our stars that the insect gentry were so very easy upon us.

Our season this last year was noted for its cool, wet fall. The rain in September was so heavy and continuous that corn did not, in flat land, ripen and become plump as it does in dry, hot fall seasons. Although corn is cheap, the hogs that are sold and on their way East do not have that plump, heavy appearance that they do in years when the ground is dry and the fall weather hot. The potatoes, too, have received their share of injury from the wet, quite a large number of them being tainted with rot. But these same rains seemed to increase the apple crop, and if apples had brought any price, would have made up largely for the injury done to corn and potatoes.

Chicken-cholera hovers around yet, here and there, among us, but is rather on the decrease. It is doctored about as successfully as ever, as most of the sick die. Hog-cholera is quite active yet in this county, the northern part, at this time, having the greatest amount of it. Since pork has become so low in price, it requires a large amount of arithmetic to cipher out whether the hog-cholera is an evil or not.

Our agricultural society has a hard time to maintain its own. We do not own a fair ground, but have to rent one every year from a private company. It is true the company deals very liberally with us, but then, to be without a ground of our own, and feel that any year we may be shut out by a slight change of owners, makes us anything but happy in our prospects for the future. The main support of our society comes from but eight of the sixteen townships of the county. The other eight, having their interests in other towns than the county seat, are indifferent about helping the county fair, because it does not help build up their favorite town.

Our county commissioners refuse to exercise the power which the law has given them to aid us in purchasing a fair ground—and they are farmers, too. A very large number of societies throughout the State have been helped to procure grounds by the action of their commissioners, but Crawford is not among that number, and, to change the subject, *of course we have no turnpikes.*

For three years we have succeeded in keeping liquor and gambling out of our fairs. It may be thought by some that we are too rigid in our morals and too severe in cutting down the premiums on horse-racing, but, in the minds of most of our members, who have all their lives been farmers, and who expect to remain so, we stand strongly approved.

We have a standing premium, for the past three years, offered for field crops, but have never had a single entry. It must not be inferred from this that our farmers are indifferent to good crops and good farming—no class of persons in the country is more desirous of excelling in their art than are our Crawford county farmers—but one is waiting for the other to begin. When they once begin, look out!

We have always had a famine of Agricultural Reports here.

CUYAHOGA COUNTY.

The principal crops of Cuyahoga county for the past year were wheat, oats, corn, potatoes, and hay. I have not at hand at the present time data enough to give an approximate estimate of the number of acres of each of the foregoing crops raised during the season. The average yield per acre of wheat is about eighteen bushels; oats, forty-five bushels; corn, fifty bushels. Taken as a whole, the potato crop this season was a failure—the bugs almost annihilated the crop. In some parts of the county located on the rivers and creeks the crop was totally annihilated by the flood in September last.

The crop of hay was large, and was of a superior quality. A great number of acres in this county are devoted exclusively to raising hay for the Cleveland market, which is more remunerative than raising cereals.

The striking characteristics of the past season have been that the weather has been very warm, and during some parts of the season extremely hot, with an abundance of rainfall. It was also distinguished by a luxuriant growth of vegetation and of all the cultivated crops. During the past season the potato bug ruined that crop. Aside from the ravages of the potato bug, other crops were not molested by destructive insects. No injury of any account was done to wheat, oats, corn, or fruit crops.

At the present time the condition of the society is very flattering. The exhibits and receipts of the past fair far exceeded the most sanguine expectations of the officers and managers, and should the future present fair prospects, the success of our county fair at this place is achieved.

The premium crops were wheat, oats, corn, rye, and potatoes. The display of wheat was large and full, embracing every variety known to the farmers in the immediate vicinity that has been grown successfully by them. In the display of oats, corn, rye, and the other grains, the competition was very large and spirited, and some very fine exhibitions were noticed. The exhibition of potatoes was mostly of the early varieties, and the display surpassed the expectations of all.

The display of vegetables was fine, it being the best the society has had since the fair has been held at this place. The display of fruit was very gratifying, and surpassed anything ever seen here in the fruit line. Owing to the late date that the fair was held, the display of peaches was not up to the full standard, most of the standard varieties having been harvested. The show of maple sugar and syrup did credit to the exhibiters. Some very fine samples were shown, which shows a decided improvement in the manner of producing it. Considerable attention is now being paid to this branch of farming industry, as it is a very remunerative branch of the farmer's business.

The dairy products were well represented. Every factory in this vicinity had some of its make on exhibition. In every department the agricultural hall was well filled, and showed the results that might be obtained by giving attention and care to farm products.

The floral, fine art and domestic hall was well filled with a choice display of fine goods. The show of horses, cattle, sheep, swine, and poultry was the finest ever seen here. In fact, every department was filled satisfactorily with choice exhibits, and so far as the articles on exhibition were concerned, it was a decided success.

One feature of the fair deserves especial mention, and that is the exhibition of Indian relics. Col. Whittlesey passed on the merits of the articles. In this department there was a large and fine exhibition of relics, embracing every known relic found in this part of the State.

Taking everything into consideration, the agricultural interests of this county are in a more advanced condition than formerly. Considerable attention is now being paid to the breeding and raising of fine and thoroughbred stock and poultry.

DARKE COUNTY.

The principal crops raised in this county are as follows:

Wheat, estimated, 36,000 acres; amount, 648,000 bushels; av'ge per acre, 18 bushels.
Oats, " 18,000 " " 720,000 " " 40 "
Corn, " 73,000 " " 2,920,000 " " 40 "
Rye was greatly damaged by frost; yield was not more than half a crop.
Barley was also damaged by frost—not more than half a crop.
Potatoes, estimated, 1,700 acres; amount, 125,000 bushels; great damage by rot.
Tobacco, " 1,000 " " 1,250,000 pounds.

Tobacco raising is rapidly on the increase in this county. We have a large quantity of land adapted to the raising of this article of product. The tobacco in quality raised this year was very fine, especially in the southern portion of the county. The crop in some localities was to some extent damaged by hail.

The growing of sorghum is also on the increase; there seems to be more or less interest in its growth in all localities. The number of acres in 1878 was 650, and about 50,000 gallons of sirup.

The rains seemed to be distributed so as to do the most good during the season. There was no general complaint of the damage done to crops by insects.

Our county society is in a generally good, healthy condition, as you may see by my financial report, taking into consideration the fact that when the present managers took charge of affairs, three years ago, the indebtedness of the society was over $5,300, which debt is now reduced to about $2,000, after paying interest, expenses, premiums, etc., in full, besides paying premiums on a large list of articles not included in our published premium list.

The society expects ere long, by good management, to get out of debt, and to be able soon thereafter to add great improvements to their large and commodious grounds, which from its location (lying between and adjacent to two free turnpikes, leading from the richest and most productive portions of the county into Greenville), can be made one of the best fair grounds in the State, with little cost.

DEFIANCE COUNTY.

Chief products, grain; amount sown last year, large; yield, splendid. Fruit above average crop. Farmers are paying more attention to raising thoroughbred stock.

Our society is in good shape, and we think it one of the best in the State. The fair in 1878 was splendid, and prospects flattering for future success of the society.

DELAWARE COUNTY.

A striking characteristic of the previous season was an unusual yield of wheat and fruit, especially apples, the yield of wheat being in some instances as high as forty-five bushels per acre. I have no data for furnishing names of destructive insects, etc.

Our agricultural society is burdened with indebtedness. The fair held in 1878 was rather above its predecessors in number of entries and general display. An unusual interest was taken in a new department introduced last year, consisting of pioneer relics, curiosities, etc. The proceeds of the fair, however, were insufficient to pay all the premiums awarded and meet the current expenses of the society The future of our society depends upon some means to be devised to remove the indebtedness of the society, and provide adequate means for meeting the current expenses by a change in terms of admission, etc.

There was but one application for premium on field crops, viz., on corn, which showed a yield of one hundred bushels per acre.

Considerable attention is given in Delaware county to the rearing of thoroughbred stock, including mainly Norman and Clydesdale horses, Shorthorn cattle, and Merino sheep.

Probably in few counties in the State has greater attention been given to improvement in tillage by means of draining.

FAIRFIELD COUNTY.

The following table contains a statement of the principal crops raised in this county, an estimate of the amount of each, and of the average yield per acre:

Corn,	65,000	acres;	am't,	3,000,000	bushels;	average per acre,	46	bushels.
Wheat,	35,000	"	"	390,000	"	"	12	"
Rye	700	"	"	7,000	"	"	7	"
Barley,	1,500	"	"	30,000	"	"	20	"
Oats,	5,700	"	"	12,750	"	"	25	"
Buckwheat,	250	"	"	1,750	"	"	7	"
Potatoes,	1,400	"	"	112,000	"	"	80	"
Sweet potatoes,	100	"	"	5,000	"	"	50	"
Tobacco,	15	"	"	4,500	pounds	"	300	pounds.
Meadow hay,	1,700	"	"	15,000	tons.			
Clover,	6,000	"	"	3,700	"	yield, 4,000 bushels clover seed.		

It is also estimated that 600 acres of clover was plowed under for manure. I have no statements concerning premium crops, as no entries were made for the premiums offered on crops. Our farmers seem to dread the trouble of procuring the necessary affidavits.

During the last season considerable damage was done to the corn crop in the northern part of the county, by a very severe hail storm. In the month of August the corn and late potatoes suffered from drouth. This county has been comparatively free from destructive insects, the potato bug and chinch bug doing but little damage to crops. The wheat crop was excellent, some fields yielding thirty bushels per acre; harvest dry and early, and crop well cured. Taking it as a whole, the season of 1878 was more favorable to the farmer than any summer during the last ten years.

The Fairfield County Agricultural Society has 350 members. Its directors are energetic and harmonious in their efforts for the success of the fair, and are earnestly supported by the citizens of Fairfield and adjoining counties. The best indication of our present condition and future prosperity is the cash surplus of $2,800.

FRANKLIN COUNTY.

The hay crop of 1878, both in quantity and quality, was extra. The wheat, corn, and oat crops have been more than an average in quantity and quality. Fruit was abundant, but not of a very good quality. Our potato crop falls short of that of last year, owing to the unfavorable season and the Colorado bug. Our farmers are paying a great deal of attention to the raising of fine stock of all kinds, but have suffered considerably from hog cholera.

Underdraining has received a great deal of attention from our farmers throughout the whole county during the past year, with the most favorable results, in many cases changing third rate to first rate land. Great attention has been paid to gardening in this county; all kinds of vegetables have been abundant except cabbage, which was greatly damaged by worms.

FULTON COUNTY.

The principal crops raised in our county are wheat, corn, oats, and grass, or hay. The wheat crop of 1878 was above an average. The fly injured some pieces badly, especially the early, sowed on sand land. The greatest yield per acre reported was 41 bushels; from 30 to 36 bushels was not an uncommon yield last harvest. The corn crop of 1878 was injured by the wet weather about hoeing or planting time; however, there were some extra good yields of corn. One man reports 100 bushels shelled corn per acre. Oa's was a full crop. Hay, a good crop this year, and well harvested. Potato crop far below an average, owing to wet and drouth. The potato beetle did but little damage. The apple crop was simply immense. and of superior quality.

The Tri-State Fair being held so close to our county, detracts greatly from the interest usually taken in our county society or fair, especially in the revenue. Our society owns the ground, and have very good buildings, now, except horse stabling. The buildings erected are durable and convenient. One item not usually found at county fairs, is the convenient arrangement for loading and unloading hogs and sheep. There is a hall between the hog and sheep pens. They are unloaded at the end of the hall; the door of the pen to be occupied when opened closes the hall, so they are easily driven to their places, and can be driven into the wagon again without inconvenience. Our board are making every effort to keep up an interest in the welfare of our society. We can soon greatly increase the premiums, as our buildings will be all that is necessary. The show of horses, cattle, hogs, and sheep was good—some extra good animals exhibited at our last fair.

GREENE COUNTY.

There were no crops entered for premiums at the last fair, consequently no awards. The acreage of wheat in the county was, 30,011, number of bushels produced, 501,482; number of acres, rye, 860, number bushels, 10,565; number of acres, oats, 4,338, number bushels, 133,688; number of acres, barley, 859, number bushels, 28,081; number of acres, corn, 58,368, number bushels, 2,210,998; number of acres, meadow, 11,178, number tons, hay, 14,903; number of acres, flax, 1,697, number bushels, 23,157; number of acres, potatoes, 1,081, number bushels, 82,564; number of bushels, apples, 56,606; number of pounds, butter, 444,178.

The above are some of the principal crops; the season was fairly good, and crops not damaged by insects to any extent. The general condition of our society is good.

GUERNSEY COUNTY.

The general feeling among our farmers was, that what was worth doing was worth doing well; that what a man sows, that shall he also reap; that good seed was the first important thing; that the ground should be put in good condition, and that it should be harrowed well, particularly for wheat, also that wheat ought to be put in the ground a good depth; and some of our farmers say they would not put wheat in any other way but with the drill.

Some of our competitors say, in regard to potatoes, that if you want to raise small potatoes, use seed of the same kind; say they have experimented on the subject—that if you have any kind of good ground, and plant large potatoes, you will seldom find any small ones to dig. This, I think rather a novel idea, and for the benefit of mankind in general, I think it deserves more than a passing notice in this report—only wishing that this may be one of the means of ridding our markets of small potatoes. I believe this is about all the statements made by competitors.

Our society was organized August the 7th, 1878, by electing the following officers and board of directors: J. W. Moore, President, A. P. Frame, Vice President, V. D. Craig, Secretary, and Wm. McVey, Treasurer. The Board of Directors are, S. S. Linn, Dr. F. Rea, Wm. Hamilton, Miller McCollum, W. M. Cunningham, E. M. Creighton, Seth Michener, John Kester, John B. Laughlin, M. N. Umstot, W. N. Cowden, and S. B. Lawrence.

We have adopted a constitution and by-laws agreeable to your rules and regulations, and we have now one hundred and eighty-one members, being residents of all parts of the county. A good feeling seems to prevail, and all are very much encouraged over the success of our first fair, as we have paid all our premiums in full, and have some funds still in our treasury.

The Board of Directors, from their past experience, think they can make quite an improvement, and have no doubt that by the time they hold their next fair that there will be a larger and better show of all kinds of products.

The principal crops raised in the county are corn, wheat, oats, and potatoes.

The corn crop is a little below the average, as there was quite a difference in the rainfall in different parts of the county.

The wheat crop was above the average, and from all accounts I suppose there was more wheat raised in Guernsey this year than there has been for the past three years, although in the north-east part of the county hail destroyed quite a number of acres. The fly also injured some wheat; but from what I can learn did not do much damage. The general varieties of wheat sown are the Clawson, German Amber, and the Indiana Swamp. A great many of our farmers think that the German Amber is *the* wheat. They claim for it, the straw is strong, that it yields more to the acre, and that it makes better flour.

The oats crop was above the average, although I hear some complain of light oats.

The potato crop was below the average. The early potatoes were good; but on account of having but very little rain, the late potatoes were almost a failure.

The show of stock was good. The horse department was well filled, except in the speed ring. This can be accounted for in this manner. Our board determined on the start that we would have a *county fair*, and not a horse fair; and, consequently did not offer large premiums for speed, but made our premiums larger in other departments, which brought out quite a large competition, and most of our patrons seemed to be well pleased with the change, as well as the Board of Directors, and are still of the same opinion, and we can see no good reason to depart from our first attempt. In the cattle department the Durhams seemed to be the choice; while in the swine department the Berkshires took the lead.

HAMILTON COUNTY.

The principal crops are corn and potatoes, although oats and wheat are raised in considerable quantities. Within a radius of ten miles of Cincinnati a large portion of the farming is devoted to gardening, fruit-raising, and to the dairy.

I have no means of finding out the number of acres of the different crops and the average per acre. The Auditor of our county says he has made but one copy of the total amounts, and that has been sent to the Auditor of the State. I think from my own observation, corn will average forty-five bushels to the acre; oats, thirty-five bushels; potatoes, eighty bushels; wheat, twenty bushels. We had a very favorable season for the growth of all kinds of crops. Rust injured the wheat to some extent. The only destructive insect we have in this county is the Colorado potato bug, and it does very little injury, owing to the fact that it is easily destroyed by the use of Paris green.

The agricultural society is in a good condition—better than for some years past, and is doing a great good by awakening more interest in the raising of better crops and finer stock. No field crops by the acre were entered for premiums at our last fair.

HANCOCK COUNTY.

Our twenty-seventh exhibition was held the first week in October, 1878, commencing on Wednesday and closing the following Saturday, during which time the weather was all that could be desired, except on Saturday, which was cold and wet; and although the attendance was not what we expected, yet it was very fair.

As usual the exhibition was well attended, and the articles exhibited were of a superior quality. The stock exhibition was very fine, but the exhibition of swine and sheep did not, in numbers, come up to that of last year. The grain and seed department was full, and of good quality. Fruits were abundant. The show of vegetables was not quite so good as that of some former years. Agricultural implements were in abundance. In fact the entire exhibition was one of which any county may well feel proud.

When we remember that but little more than one-half the acreage of the county (135,939 acres) is under cultivation, and much of that only newly cleared, and, of course, much less productive than older lands, we may well be astonished at our immense crops, and the value of our live stock. In 1877 there were produced in the county wheat, oats, and corn (the three principal crops); grain of the value of $3,268,786; and the crop of 1878 will far exceed that. The value of horses, cattle, mules, sheep, and swine, as returned by the assessors, $936,963.

But the increase in numbers of bushels of grain and heads of live stock is not the only advancement we have made. The quality has more than kept pace with the quantity, and now we can boast of some as fine stock as any county in the north-west, if not in the whole State.

The number of entries at our last fair was about fifteen hundred. Altogether we congratulate ourselves on the success of the exhibition, the receipts of which enabled us to pay all expenses, and make a reduction in our indebtedness.

HARDIN COUNTY.

The receipts of our society for the present year were slightly in excess of expenditures, thus proving that by careful management the society may be assured of permanent success financially. From rather imperfect information, but reliable as it goes, I am informed that the wheat crop of 1878 will amount to over 175,000 bushels, with an average of at least twenty-nine bushels to the acre; corn, 1,400,000 bushels, with an average of fifty-five bushels to the acre; oats, at least 200,000 bushels, with an average of twenty-six bushels to the acre; grass, 15,000 tons. Our crop of potatoes not so good in quality, but equal in yield of former years. The farmers have experienced but little trouble, if any, from destructive insects, and, on the whole, may congratulate themselves on having one of the premium counties of the State.

HARRISON COUNTY.

The Harrison County Agricultural Society held its thirty-first annual fair at Cadiz, Ohio, September 3d, 4th, 5th, and 6th, A.D. 1878. Our fair continued four days, the first of which was devoted to making entries of articles and stock, to be put on exhibition, arranging them in their proper places, etc. The weather was all that could be desired. The attendance on the third and fourth days very good, a full average of former years. Good order prevailed throughout the whole fair, and the general character of the exhibition was highly creditable to the people who attended on that occasion. The different departments were very fairly represented. Some departments probably not so good as could be desired. Cattle a full average with former years. Horses good; all classes represented from the sucking colt to the mature horse. Sheep very good, as it always is. Those on exhibition were principally from flocks in Harrison and counties immediately joining. Farm implements very fairly represented, though not so good as in counties having facilities for the manufacture of those implements. Floral hall was very creditable to our exhibition, and demonstrates one fact very clearly, that the ladies of our town and surrounding country have skill, industry, and a willingness to add to the attractions and usefulness of our county fair. In this department were to be found almost every variety of both plain and fancy needle work, paintings, drawings, photographs, engravings, etc. Then comes the numerous articles of home manufacture, such as bread, cakes, butter, preserves, fruits, sealed fruits, jellies, pickles, etc. Another item that added largely to the attractions of floral hall was the flowers and plants on exhibition. This item we regard as being worthy of special mention; the flowers and plants were of a very superior quality, almost every variety being represented.

In consequence of having held our fair so early in the season, the show of fruit was not so good as usual, nor as good as it would have been later in the season, as the fruit crop was abundant.

The principal crops of our county are wheat, corn, oats, hay, and potatoes.

Our wheat crop, harvested in the year 1878, was above an average in quality and yield; say about twenty-five bushels per acre.

Our corn crop was a full average, even after it was damaged in some sections of the county by wind and hail; average, about forty-five bushels per acre.

Oat crop, excellent, yielding an average of forty-five bushels per acre.

Hay, a full average crop.

Potatoes raised in the early part of the season pretty good. Late potatoes almost a failure; not above one-third of a crop.

Fruit very abundant and very good; above an average crop.

After paying premiums and expenses in the year 1877, we found ourselves in debt twenty-four hundred dollars. We sold bonds to that amount, the denominations of which were 5's, 10's, 15's, 20's, 25's, 30's, and 50's. These bonds were made to draw four per cent. interest; interest payable annually. It was provided in the bond that ten per cent. of the principal should be paid annually. There was a further provision, however, that no part of the principal nor interest should be paid unless there was a surplus in the treasury, after paying actual expenses. This year we paid our actual expenses and the interest on those bonds. We now feel that our society is in a much healthier condition than it was two years ago, and with good weather and proper management we feel that the Harrison county fair will yet live.

HIGHLAND COUNTY.

The following are the principal crops raised in Highland county, for the year 1878 together with estimate of the amount of each:

The premium reports to our association have been few, the best in regard to wheat being an average of twenty-two and one-half bushels per acre of actual measurement from a field of twenty acres, a total of 450 bushels. While another report gives a yield of forty bushels per acre from seven acres; twenty-five bushels per acre from three acres; and a grand total of 600 bushels from twenty-nine acres.

There were 29,000 acres planted in wheat in Highland county, yielding nearly 363,000 bushels, being an average yield per acre of twelve and one-half bushels, though great anxiety was entertained by the farmers previous to the harvest, lest this crop should be seriously injured by rust, of which the indications were very strong. These fears, happily, were not realized, and the harvest returned fully an average yield.

There were 1,000 acres of rye planted, with a yield of nearly 10,000 bushels, an average of about ten bushels to the acre.

Of oats there was nearly 7,000 acres, with a product of about 140,000 bushels, an average of about twenty bushels to the acre.

By far the most important crop of the county is corn, of which there were 63,000 acres, yielding more than 2,000,000 bushels, an average of nearly thirty-two bushels per acre. This is an average yield.

There were about 18,000 acres in meadow, with a yield of over 18,000 tons of hay, or an average of a little more than a ton to the acre.

Twelve thousand acres were sown with clover, producing 650 tons of hay and 500 bushels of seed, while numbers of acres were plowed under for manure.

More than 1,000 acres were planted in potatoes, with a product of nearly 90,000 bushels, or ninety bushels to the acre; a very good crop and excellent quality.

Fifty acres were in tobacco, producing over 3,000 pounds of tobacco; 600 pounds per acre.

The butter product of the county was about half a million of pounds, and of cheese 2,000 pounds.

Two hundred and fifty acres were in sorghum, yielding about 200 pounds of sugar and 20,000 gallons of syrup; about eighty gallons per acre.

Two thousand pounds of maple sugar and 1,700 gallons of sirup were produced.

Fifteen thousand hives of bees made about 16,000 pounds of honey.

Five thousand four hundred acres, set out in orchards, yielded 150,000 bushels of apples, about 3,000 bushels of peaches, and 1,500 bushels of pears.

The garden products were about as good as usual, except cabbage, which was short, being destroyed by what the gardeners call the cabbage worm.

Altogether, the products of Highland county have been fair.

HOCKING COUNTY.

The Hocking County Agricultural Society held its twenty-sixth annual fair on the 2d, 3d, 4th, and 5th days of October.

The first day, as usual, was devoted to making entries and arranging articles in the various departments, preparatory to a good show. The second day was cloudy and unpromising, hence on that day we had not a very large attendance. The third and fourth days were in a great degree more pleasant, and upon those days the people turned out pretty well, but not what we expected from the fine exhibits displayed in every department; notwithstanding all this, we hope to close up the year's business almost if not entirely out of debt.

The aggregate number of entries was fully equal to any former year, and the animals, farm products, and articles exhibited in the different departments were of excellent quality, not excelled by any former display in this county, but altogether superior, thus showing the good effect the society is having upon the productive industries of Hocking county. The success of our society and the excellence of our fairs are mainly attributable to the earnest efforts of our board of officers and the desire the people have for the advancement of agriculture in our midst.

The premiums were liberal, and as a consequence brought out a pretty full exhibit in all departments. The show of horses, cattle, sheep, and hogs was excellent, and would compare favorably with any county in the State. The display of fruit, especially apples, was entirely beyond any exhibition in the horticultural line ever produced in our county.

Floral hall, in which the household department was represented, was pretty well filled with pictures, embroidery, needlework of almost every variety, patchwork, etc., all of which attested the great skill and handiwork of the good ladies of our town and county. The display of farm products was far above an average in many varieties. There was a good display of handiwork in the mechanical department, showing that an enterprising feeling pervades our manufacturing establishments and workshops. Our membership numbers near two hundred voting members.

Our principal crops are wheat, corn, oats, hay, potatoes, and sorghum, with a goodly amount of rye, barley, buckwheat, clover seed, timothy seed, flax seed, and tobacco, but as to the average yield per acre of our crops we have no means of making anything like an exact estimate for the year 1878. We can say, however, that our wheat crop was good in every respect, and will yield away above an average per acre. The same may be said of oats and hay; corn, potatoes, and sorghum a good average.

HOLMES COUNTY.

The principal crops raised in our county are as follows: Wheat, rye, oats, buckwheat, barley, corn, and clover seed. We raised 335,753 bushels of wheat, at an average yield per acre of 14¾ bushels; rye, 10,445 bushels, at an average yield per acre of 10¼ bushels; buckwheat, 5,268 bushels, with an average yield per acre of 10¾ bushels; oats, 546,817 bushels, with an average yield per acre of 32½ bushels; barley, 1,932 bushels, making an average yield per acre of 19 1-3 bushels; corn, 927,568 bushels, making an average yield per acre of 36¼ bushels; clover seed, 7,278 bushels. These crops were raised on 8,306 acres, being an increase over last year, in number of bushels, of about one-sixth, except in barley, which was a falling off of about one-sixth less than the previous year. Our crops have not been troubled with insects.

The condition of our society is good; the people of the county have taken an increased interest in it, as is shown by an increase of nearly two hundred entries over last year. The society is entirely free from politics; it prohibits gambling and the sale of intoxicating liquors during its annual fairs, which seems to meet the admiration and approval of all the people of the county. The society feels that it has done good already, from the fact that it brings each year to its annual fair an increase of thoroughbred stock of all kinds, and it has caused quite a strife among our farmers in importing and raising it. Our society is entirely out of debt, with a small amount in the treasury. The society has also caused a competition in the raising of grains, vegetables, and fruits, and the cultivation of the same, making a better exhibition in quality and variety at each succeeding fair. In one particular our society has met the favor of the people—it is careful in its selection of committees, and to secure the faithful action of the committees, the society has made it a rule to strike off the entries of parties who in any way interfere with them in their deliberations, which rule has proven quite beneficial to the interests of the society, and which has also helped greatly to establish in the people of the county good feeling for the society. We take courage, too, from the fact that in all the departments this fall, at its exhibition, the entries showed a better quality and variety of articles than the previous year. Our county is well adapted to all branches of agriculture; soil good and well watered.

Manufactories sufficient for the convenience and welfare of our people are located in the county. One noticeable improvement in our farmers is the greater pains they are taking in preparing the soil for planting, which well pays every farmer for his trouble and labor.

JACKSON COUNTY.

The twenty-fourth annual fair was held October 3 and 4, at Jackson. There was no competition on field crops. The weather was clear and pleasant. The attendance was not as large as in past years. This being in a mining district, and money very scarce, was the reason our fair was not largely attended; yet we think that the society will in the future be a success. There are a great number of farmers who would not bear the idea of abandoning the society.

The largest crop of the cereals raised in this county is corn, and is considered the most important to our farmers. The amount raised was 647,000 bushels; average per acre, 23 bushels.

Wheat,	amount raised,	60,000	bushels;	average per acre,	8	bushels.
Oats,	"	70,000	"	"	20	"
Potatoes,	"	45,000	"	"	50	"
Timothy,	"	12,200	tons	"	1	ton.

The fruit crop was tolerably good. We were not troubled with any destructive insects. The season was very hot and dry in some parts of the county.

JEFFERSON COUNTY.

Agriculture in this county seems to be in a healthy and prosperous condition. The crops usually were pretty good, and were not materially interfered with by any destructive insects. Live stock of all kinds have done well the past year, and were not subjected to any prevailing disease.

The spring and early part of the summer was wet and seasonable, but the latter part of the summer was subjected to drought, which injured the corn crop to some extent, and materially injured the crop of potatoes.

The County Agricultural Society was never in a more prosperous condition than at the present time. The exhibition last fall was the best, largest, and most attractive of any yet held. The entries were double those of the first year (1871), and several hundred more than any previous year since that time.

Notwithstanding the inclement weather on the second day of the fair, the receipts were sufficient to pay the premiums in full and all the necessary expenses, leaving a balance in the treasury of about $275.

There is no doubt but that the society has been a benefit to the people of the county. There is a marked improvement in the quality of live stock raised, and in all the branches of agriculture. For instance, at the first fair (1871) there were only three or four thoroughbred cattle on exhibition, but at the last fair (1878) there were about thirty very fine thoroughbreds exhibited, and with only two exceptions, were all owned in this county.

It is very difficult to predict the future usefulness and prosperity of any society or organization with any very great degree of accuracy, but judging of the future by the past, we have no hesitancy in predicting for the Jefferson County Agricultural Society a career of future usefulness and prosperity for many years to come.

The principal crops grown in the county are wheat, oats, corn, and hay. Barley, rye, potatoes, and sorghum are also raised, but not to any great extent.

The wheat crop was good; would estimate the number of acres at from twenty to twenty-five thousand, and the yield at from three hundred to three hundred and seventy-five thousand bushels, or an average of about fifteen bushels per acre.

The crop of oats was also good; would estimate the number of acres at about fifteen thousand, and the yield at about five hundred and twenty-five thousand bushels, an average of thirty-five bushels per acre.

Owing to the drought that prevailed the latter part of the season, the yield of corn was not as abundant as it is some years; nevertheless the crop was fair. Would estimate the number of acres at from twenty-five to thirty thousand, and the the yield at from ten to twelve hundred thousand bushels, an average of forty bushels per acre.

The crop of hay was unusually large, and the product of a very superior quality.

The crop of barley and rye was also fair, but there is comparatively very little of either raised in the county.

Potatoes and other late root crops were materially injured by the dry weather, and the yield could not be considered large.

Tobacco and flax are not cultivated in the county to an extent worth mentioning.

KNOX COUNTY.

At a meeting of the Knox County Board of Agriculture, at the clerk's office, on Saturday, January 25, President Levering read the following report:

The twenty-fifth annual fair of the Knox County Agricultural Society was held on the society's grounds, in the city of Mt. Vernon, on the 24th, 25th, 26th, and 27th days of September, 1878. It was well attended, and was the most successful exhibition the society ever held, every department being fully represented. Crops of all kinds were good the past season. Our farmers have generally adopted a mixed husbandry, which is more profitable in a series of years than to make a speciality of any one crop, while any crop that can be grown profitably in the State, can be grown here successfully.

Wheat, corn, oats, and hay, are the principal crops grown in the county. The wheat crop of 1878 was, perhaps, the largest ever grown in the county, both in acreage and the yield per acre—there are many varieties of wheat grown in the county—the Mediterranean still holding a prominent place as a sure crop, while the largest yields are reported from the Fultz; the Clawson not yet sufficiently tested; the Gypsey generally discarded.

A large portion of our county is well adapted to growing corn, especially the western part, and the Kokosing Valley. It is the largest crop raised in the county, and considered by farmers the most important; is generally fed to stock, thus producing the largest income of any other crop.

Of oats, there has been several new varieties introduced, but none succeeds as well as the common yellow spangled variety. Some of the Sweedish or barley oats are still raised. The Norway or black oats are entirely discarded.

Hay is an important crop in the county, and was a good one the past season; is principally fed on the farms to stock by the farmers. Clover is raised in large quantities for hay and seed, as well as pasture, and to plow under for manure; is considered a good fertilizer.

Rye, flax, barley, and buckwheat are raised to some extent but not as a main crop.

The potato crop has assumed considerable importance, and is the chief root crop grown in the county. The crop the past season was a full average one, the Colorado bug doing less damage than heretofore—Early Rose and Peachblow being the varieties most cultivated.

Sorghum is grown but little, perhaps owing to the fact that sugar groves abound in nearly all parts of the county, from which large amounts of sugar and syrup are annually produced.

The honey bee contributed more than ten tons of honey the past season, which goes to make up the sweet produced in the county.

Of fruit, apples are the principal crop; the yield of 1878 was the largest ever produced in the county, and of excellent quality. Besides what was required for home consumption, large quantities were shipped to distant parts of this country and England, while the low price prevailing left many thousand bushels to waste in the orchards. The exhibition of apples at our fair was the best ever shown in the county. Peaches were more than an average crop. Pears were a small crop, owing to the blight having killed most of the trees. Plums not very plenty, owing to the ravages of the curculio. Small fruit and berries of all kinds, an abundant crop, which are pretty extensively cultivated. Grapes were injured by frost in the spring, and a small crop.

In the live stock department, there is a manifest improvement in all kinds of live stock bred and raised in the county. This improvement has, no doubt, been brought about by the annual exhibitions at our county fairs.

The introduction of good blooded road horses has been a success, in producing some of the finest trotters and roadsters in the State, while the importation of the Clydesdale, Norman, and Percheron, (of which there are quite a number in the county), produced a heavy draft horse, for which good prices are paid by dealers, to supply the demand for heavy cart and dray horses in the eastern market, and the lumber regions of the northwest.

Of cattle—the introduction of the Shorthorn has made a valuable improvement in the cattle of the county, by crossing with the common cows, producing good feeding steers, of which large numbers are annually transported to eastern markets. There are several fine herds in the county; but few of the Jerseys, Alderneys, Ayrshires, or Devons in the county. The number of cattle on the increase. No cheese factories or large dairies in the county.

While Knox county ranks among the foremost counties in the State in the production of sheep and wool, there has been a decline in the numbers the past few years, which is fully made up by the increase in quality. The Spanish or American Merino compose, by far, the large portion of the sheep of the county, yet there is a fair sprinkling of the combing wool or mutton breeds.

The exhibition of swine at our last fair was, by far, the best ever held in the county, showing that our farmers take a lively interest in the production of the improved breeds of swine, including Poland-China, Berkshire, and the important Chester Whites—showing very fine specimens of the different breeds. There has not been any infectious or contagions diseases prevailing among the domestic animals of the county the past year, except chicken cholera, which is quite prevalent in most parts of the county, and no certain cure known, yet at our last fair all the leading or popular breeds of fowls were exhibited, from the beautiful little Seabright Bantam to the large Asiatics.

The large exhibition of improved machinery and farming implements exhibited at our last fair, was a good index of the intelligence and improvement of the farmers and mechanics of the county.

Fine art hall was a place of great attraction, which was filled to overflowing with the handiwork of the many fair ladies whose intelligence, perseverance, and skill deserve great credit in making so successful an exhibition.

Floral hall gave unmistakable evidence that floriculture, which is a sure index of advanced civilization, has a prominent place in the cultivated minds and fine taste of the ladies and gentlemen under whose fostering care such a great variety of beautiful and rare shrubs, vines, plants, and flowers were produced. Too much praise can not be bestowed upon them for their labor and skill in their arrangement in the hall, which was the admiration of all visitors at the fair.

Of farm products, there was a fine display, as well as all kinds of garden vegetables. There was a lively competition for the premiums upon all articles for which a premium was offered.

The general condition of agriculture in the county is improving. The farmers are taking more pains in the cultivation of the soil, by underdraining, manuring, and a more thorough system in the relation of crops. The only discouragement to farmers is the dull times, caused by the low prices prevailing for all kinds of farm products.

LAKE COUNTY.

The principal crops grown in this county are, wheat, corn, oats, and potatoes. Of these, wheat is a larger yield than usual, and of excellent quality. I think a fair estimate is twenty (20) bushels per acre, when ordinarily twelve to fifteen bushels is considered a fair yield. The Hessian fly injured some fields, but not very materially. Corn, a fair average yield, but considerable soft corn. Oats, a good yield and of good quality. Potatoes, not half a crop, and rotting badly. The Colorado beetle has been very troublesome, but persistent fighting has prevented a total destruction in all cases, so far as I have heard. In fruit, apples are very abundant, and some of very fine large growth and excellent quality; but the crop is largely injured by worms; not keeping well. Peaches were a light crop, and generally very poor in quality; a few fine ones. The cabbage worm has been troublesome, but not so much so as last year. Quite an average number of acres of wheat have been sown this fall. There is some complaint of the fly being already at work, and fears are entertained of damage to the crop next year. The season has been remarkable for no one thing in particular; quite a severe drouth, but not as damaging as some seasons; on the whole, quite favorable. Our county fair, held on the 4th, 5th, and 6th of September was well attended. Eight hundred and ninety-five entries were made. The weather was fine, and the show of horses fair; of cattle, never excelled; sheep and hogs, unusually good; of vegetables, not so large as usual, owing, in great measure, to the early time in the season. The show of fruit, especially apples, was exceedingly good. In agricultural implements, domestic manufactures, fancy goods, etc., a fair exhibit; and on the whole our fair must be considered a success. It was so financially. There seems to be a growing interest among our farmers to labor to keep up the interest in not only our fair, but in agriculture generally; and such being the case, it certainly looks encouraging for the state of agriculture in the county of Lake.

LAWRENCE COUNTY.

1. Corn, 25 bushels on hill and 40 on bottom land. 2. Wheat, 8 bushels on hill and 40 on bottom land. 3. Hay, 1 ton on hill and 2 on bottom land. 4. Apples, 40 bushels on hill and 30 on bottom land. 5. Potatoes, 100 bushels early, 40 bushels late. Our county also produces considerable oats, sorghum, barley, beans, and vegetables; for quantities of these will be under the necessity of referring you to the statistics gathered yearly by the assessors.

The season has been one very seasonable in some localities, and very dry in others, a very short distance only, separating the regions of rain and drouth; and while some parts of our county brought forth abundantly, other parts brought forth sparingly, making us a very low average, as above.

Our farmers complain of worms, both in the growing corn and in the green ears, which they attribute to unnecessary destruction of birds.

The potato bug has not bothered us much this year, confining their attention mostly to the sand-briers, which they are exterminating (a good thing).

Our farmers are showing marked improvement in cattle, sheep, hogs, and mules, and are turning their attention largely to their production instead of corn, so generally raised when the iron interests where predominant.

We also make a more general use of boards and wires in fencing, and but little inclination to invest in hedges.

Farm buildings are generally of a better class than formerly built, and so are the roads now being constructed. We also believe that a better class of implements are being used; also better wagons and nicer modes of conveyance.

The present season, a few of our farmers are using fertilizers on their wheat, but it is too early to know the result.

Our fair, we think, exceeded all our former ones in the show of stock and products, and, considering the depressed condition of our iron industries, and the yellow fever scourge along the river, our receipts were gratifying to the managers.

LICKING COUNTY.

The fair of 1878 was a success, financially and in point of exhibition. The exhibition was, in many respects, far ahead of former years, the entries in all the departments, excepting cattle, being larger than at any previous fair. Although the number of entries in the cattle department were not so numerous as at some former fairs, the animals exhibited were among the finest in the State.

In agricultural hall, especially, our farmers seemed determined to make the display first-class. The exhibition of small grains was good.

The vegetables exhibited were fine and well matured, and the reported yield of all, except the late potato, was large, which crop was injured in some parts of the county by drouth and excessive heat.

The yield of wheat the past season was greater than for many years.

The citizens of Licking county are manifesting an interest to assist and be present at each annual exhibition, which certainly speaks well for the future prospects of our society.

LOGAN COUNTY.

Our society is in a good condition morally, socially, and financially. With our 1,500 members, an excellent board of managers, and a general interest by our people, it would be impossible to be otherwise. Every department at the last fair was "full to overflowing." For a number of years our people have taken great interest in our county fairs, and there seems to be a determination to make them second to none in the State. Our principal crops are, wheat, corn, oats, and potatoes. I have not heard of any damage to crops the past year, by any of the numerous insects which the agricultural crops are usually "heir to."

LORAIN COUNTY.

The thirty-third annual fair of the Lorain County Agricultural Society was held October 1, 2, and 3, 1878. The weather was all that could be desired, being warm and pleasant all through. The attendance was large, and the receipts were up to, or above the average for the past several years, the society having been cumbered with a debt for eleven years, which has been gradually decreasing. All members and many citizens seemed determined to get rid of the debt this year, so, turned out with their products to make the exhibition interesting, that all might be induced to attend. In this we were not disappointed, as the receipts will show. As a help to liquidate the debt, the managers provided for an excursion to Niagara Falls, August 23. We had a good turnout of visitors, and after the expenses were paid, a balance of $175 was added to the treasury. This, with the profits from the fair, and the amounts obtained by the certificates of the President of the State Board of Agriculture, will, very nearly, if not quite, clear off the indebtedness; so, we claim that the society this year has been, pecuniarily, quite successful. With this indebtedness cleared away, our society will be able to offer more inducements to assist and stimulate farmers, mechanics, and others to make greater improvements in the future; and with the enterprise now manifested by agriculturists, we expect to see, not only our society more efficient, but greater improvements made in every department of husbandry.

The exhibition of livestock was fair, though not quite so numerous as at some former exhibitions, but the stock was generally good. Two of the Hereford herds were not represented—one, owing to the death of the veteran breeder, Mr. Humphrey; and the other for some cause not explained, which has been absent two or three years.

Horses for the carriage and those for general purposes, made quite a good showing; draft horses good. Longwool sheep were well represented. Merinos, but one flock on exhibition.

Implements and mechanic arts, well represented by nearly all manufacturers of the county. Grain, and farm products, generally, made a good showing, especially fruits of all kinds raised in the county, the vegetables being extra fine, superseding some of the larger fairs. The ladies' departments were not behind in excellence of display. Floral and fine art hall was well filled with choice articles—in plants, fine arts, and the ornamental handiworks of the ladies of the county, also with the useful domestic articles for household purposes — many goods in these several departments being of the greatest excellence.

All cereal crops of the county were good, the wheat crop surpassing any for many years. The crop of 1877 being better than had been obtained for many years, induced many farmers to put in a greater breadth that fall, and, also, many sowed or drilled earlier. The weather being favorable for the plant to make good headway, in a few weeks many farmers began to lament that they had been so foolish as to sow so early. Their "whole plant would be destroyed by the Hessian-fly"—thus nearly all were complaining, and many anticipated a failure of the wheat crop of 1878. But notwithstanding this, the crop proved the best ever raised in the county for the past twenty-five years. Many, if not all, are now satisfied that it is better to risk an early sown crop, than those put in later in the season. To get an early spring growth (which is desirable), the plant must be well rooted in the fall. The yield was large—but little under twenty bushels per acre, and all the way up to fifty bushels per acre. The Fultz, Clawson, Lancaster, and Treadwell all did well.

The oat crop was large, having an abundant crop of straw. Several heavy blows and rain storms, passing over the county, caused the crop to lodge, consequently, made it very inconvenient and expensive to harvest. The quality is fine, with a good yield (forty to seventy bushels per acre), and over the average weight.

The corn crop was large, and, where well attended, was excellent, but too many of the farmers neglect to properly cultivate the plant, and do not secure so good a return as they otherwise would do. In July a tremendous blow, attended with heavy rain and hail, passed over the north part of the county, breaking down the stalks badly; and then the storm of September 11th and 12th laid much of the corn crop flat. This occurring quite late in the growth, did not affect the yield, but made it expensive to cut, and was a great injury to the stalks for fodder. The crop was thoroughly matured, and the yield from forty to one hundred bushels per acre.

The barley crop is not very extensively raised, except on the lake shore, where it has been successfully grown for some years. From forty to sixty-five bushels per acre was the yield. The deep loam near the lake shore, when free from water, is adapted for this cereal.

Fruits of all descriptions have been plenty—the apple crop immensely so; quality of all fruit fine.

The potato crop, generally speaking, is a failure, though some few patches were extra good—small tubers generally, partly caused by the beetle, and the hot weather after heavy rains. The crop is not extensively raised, except on the reclaimed marshes. Lorain county is adapted for grass, consequently a large portion of her soil is in grass for pasture and hay.

The business of manufacturing milk into cheese is carried on quite extensively by many large factories. Many farms that were formerly pastured by large flocks of Fine-wool sheep, are now used by the dairymen for the pasturage of cows. Though the prices for milk have ruled low this year, in proportion to many former years, the dairies have been kept up. A vast amount of milk is made into cheese of the best quality, and quite a large quantity of butter manufactured at the creamery. The milk is probably the largest crop raised in the county. The summer of 1878 was favorable for grass, it having retained its greenness all through the season, though the grasshoppers were very destructive in some sections of the county. The quality of the hay was fine, and the crop well secured—about, from 2,500 to 3,000 pounds per acre being an average.

The agricultural interest of the county is progessing. The farmers are getting more enlightened as to the necessity of improvements, seeing that the old system, which has prevailed so long, does not make a sufficient return, and are inquiring into the matter of the best system of preparing the soil for a large and profitable crop, that they may be able to compete with the west and low prices. The commissioners of the county have laid out and had constructed a large amount of ditches, which has advanced the real value of the soil, and benefited the occupants immensely. Though some of the occupants, who thought they were taxed too severely for this improvement, have grumbled, they are now satisfied that the county officers had the benefit, not only of themselves in view, but of the whole county, when making these improvements. Better tillage and better buildings, and some underdrainage, is an indication of permanent improvements. All in all, we consider that Lorain county is making progress, by improving the soil, and, also, in the various departments of husbandry.

MARION COUNTY.

The people of Marion county are determined to make the Marion county fair the first county fair of the State. At the last fair there were thirty-three entries for field crops, but only return of six made. Four entries of an acre each of corn—one a yield of 98½ bushels to the acre, one of 93 bushels to the acre, one of 89¾ bushels to the acre, and one of 83 bushels to the acre. Two entries of an acre each of wheat—one a yield of 45 bushels and 50 pounds to the acre, and one of 41 bushels and 20 pounds to the acre. Two of potatoes, a quarter of an acre each—one a yield of 115 bushels on the quarter acre, and one a yield of 62 bushels on the quarter acre. No return of oats, clover, or timothy seed made.

The crops throughout the county as a general thing are good, wheat and corn number one. The largest yield of wheat reported was 95 bushels on two acres. A number of farmers report forty bushels and over to the acre. Oats, yield good, but injured by wet weather and wind-storm at time of ripening and harvest. Clover seed was injured to a large extent by grasshoppers. Potatoes was a fair crop. Hay a fair yield, grass good. Pasturing continued good and in abundance to about December 1st.

The farmers of Marion county are a wide-awake set of fellows, making use of everything that will decrease the cost of producing and increase the product of the farm. We have in the county twelve tile factories, that have manufactured in the past season an average of 5,000 racks of tile to the kiln. Allowing that as many tile are brought in from adjoining counties as are taken out of the county, would give us an estimate of 60,000 racks of tile laid in the county for one year.

The society the past season offered a premium for the killing of rats, which resulted in the killing of about fifteen hundred rats, in competition, from the first of April to the first of October, 1878.

The president, at the fair of 1878, appointed a committee consisting of Mr. A. H. King, of Marion county, and G. W. Hull and J. Sellars, of Morrow county, to make an appraisement of live stock on exhibition belonging to Marion county. The following is the appraisement: Horses, $48,100; cattle, $9,875; sheep, $1,190; swine and poultry, $3,060; making a total of $62,215.

MEDINA COUNTY.

The year 1878 has been one of unusual prosperity for the Medina county agricultural society. The old fair grounds, containing 17½ acres, has for several years proven too small for our accommodation, and efforts have been made to purchase additions thereto, but without success. Last June, however, a favorable offer was received for the old grounds, viz., $200 per acre, and at a special meeting of the board, called to consider the matter, it was determined to sell, and purchase new and more commodious grounds. The sale and transfer was effected, and after a good deal of prospecting and examining of different sites proposed and offered, the board of managers finally selected 21¼ acres just across the south road south of the old grounds, and about half a mile west of the center of Medina village, for which they paid the sum of $2,200. The new grounds are beautifully located, easily accessible, commodious in arrangement, and a grand improvement in every way over the old. New buildings were erected, a new fence built around the grounds, a fine half-mile track built, and everything put in excellent condition for a successful exhibition. The total cost of the new grounds and improvements was upwards of $5,000.

Our exhibition of 1878 was held upon these grounds, September 17th, 18th, and 19th, and was a creditable show in every way. The exhibit of horses, cattle, sheep, and hogs was unusually large, and that of cattle was particularly fine. The poultry department was also well filled. Liberal premiums were offered, and nearly every premium offered was taken. The weather during the fair was charming, and the attendance large.

The membership, receipts, and expenses will be found in the report sent to be filled out, and which is returned herewith. We have as yet had no entries for the premiums offered on best field crops, and probably there will be none for 1878.

As to the general condition of agriculture in Medina county, I think I may safely say it is flourishing. The farmers are too much in debt as a class, unquestionably, and they consequently feel the low prices of produce and the depressed condition of the times exceedingly, for their interest burdens must be borne, and amount to about the same now as when they received double and treble the prices for produce as at present. Like other classes of people, the farmer did not think but that good times would last always, and so literally failed to make hay while the sun shone, and lay in a good supply for a drouth.

The crops of Medina county the past year have been unusually good. In wheat the acreage has been larger than for many years, and the yield far above the average in the history of the county; perhaps it will be safe to say at least 20 or 25 bushels to the acre. Many pieces have yielded 40 bushels and some 50. The price now ranges from 85 to 90 cents in our home markets.

Oats have also been a good yield the past year, and find ready sale in our vicinity at 20 and 25 cents per bushel.

Corn was a fair average in yield, and just an average in quality. A large breadth was planted, so that there is no scarcity, and the prices range from 45 to 50 cents per bushel for shelled, with an abundance for all demands. The other grains are nominal with us, as we raise but little rye, barley, flax, etc., comparatively speaking. Sorghum was raised more extensively than for several years past, but not as a general crop by any means.

The potato crop, which usually amounts to something with us, was almost a total failure this year. They were, in fact, mighty small and but few in a hill. We usually speak of the yield as a failure, although a majority of the farmers raised enough for their own use. The general price here is 75 cents per bushel.

Onions a few years since became a very profitable crop, and thousands of bushels were raised in Medina county; but the market became glutted, the crop unprofitable, and it has almost ceased to be cultivated as a field crop.

Our yield of grass during the year was splendid; the feed was fine the entire season through, and the hay cut was extra good. Stock did well, and were kept out to grass until about the first of December. Hay was well secured, and is, consequently, bright and in fine order now. Good barn hay is delivered here in Medina village for $8 per ton.

Fruits of all kinds were abundant in this locality last fall. Small fruits, in their season, were plentiful and cheap, and the crop of apples was simply enormous. The thing was overdone in fact; Pomona out-did the matter completely. So plentiful were they, that choice winter fruit was bought in any quantity for 20 and 25 cents per bushel, and little sale at that. Other fruits were proportionately plentiful.

Our chief production in this county is butter and cheese. The yield in these products has been large, but probably not as great as in some other seasons, for the reasons that low prices and depressed sales have caused many farmers and dairymen to sell off a part of their cows and engage in other departments of agriculture more extensively. Nevertheless the amount of butter and cheese shipped from this county in 1878 will be no insignificant sum.

A larger number of hogs have been raised and fattened this year than usual; the low price of pork (about three cents, dressed) causes a general disgust with the business, however.

In the matter of poultry raising, there never was the interest in Medina county that there is now. More farmers and others are improving their flocks with choice breeds, and the interest is apparently deepening continually.

The wool industry and sheep rearing is still languid, but evidently reviving from the extreme depression of former years. There is more general inquiry for fine animals, both in carcass and wool, and we predict that this interest is on the eve of a much more prosperous era.

In all classes of stock the farmers of Medina county are improving the quality and breeds. Our county fair has greatly encouraged this, and our annual exhibition gives an impetus to careful breeding and fine rearing that nothing else would do. It is already proving a source of wealth as well as pleasure to many of our most intelligent agriculturists.

The quality of our soil is largely clay, inclined to be cold and wet, but underdraining is being resorted to by many, with profitable returns for money and time invested.

Fertilizers are growing in favor, and while we have heretofore robbed the land without replenishing in kind, or any measure in fact, we are now fully awake to the fact that good and carefully applied fertilizing will pay large returns.

In conclusion, allow me to state that, upon the whole, we have reason to be hopeful regarding the future of the farming interests of Medina county. We have learned much and improved greatly during the last few years. There is much yet to learn and great chance for improvement, but our people are wide awake and progressive. They are a reaching people, and propose to keep abreast of the times.

MEIGS COUNTY.

The Meigs County Agricultural Society held its twenty-fifth annual fair on the grounds of the society, at Rock Springs, near Pomeroy, September 19th and 20th, 1878.

The number of entries was 825, being about an average with former years.

The number of our members is fifty-four.

The financial condition of the Society is very good, considering the debt we have been carrying.

The display in most of the departments was as good, if not better, than usual.

The attendance was not as large as expected, owing principally to the fact that we had yellow fever in this locality.

The show of horses, cattle, sheep, and hogs was much better than usual.

The principal crops raised in this county are wheat, corn, oats, hay, and potatoes; had about an average crop, and of good quality. Have no means by which I can give you amount raised.

MERCER COUNTY.

The eleventh annual fair of the Mercer County Agricultural Society was held at Celina on the 10th, 11th, 12th, and 13th days of September, 1878. During the entire year the officers of the Society labored with untiring zeal and energy to make the fair of 1878 a success.

The number of entries was 574, being an increase over last year. The financial condition of the Society is good, being clear of debt, and owning twenty acres of ground, being reputed to be as good as any in the State.

The crops of all kinds in this county were the largest this year ever raised; the average of the wheat crop was twenty bushels to the acre; the corn crop was thirty bushels to the acre; the apple crop the largest ever raised.

Notwithstanding the extreme wet weather the first two days of our fair, it was a success financially and otherwise.

There is a gratifying increase in the interest taken in the raising of live stock of all kinds. Horses and cattle of the choicest blood and most careful breeding are to be found in this county; while hogs and sheep of the finest stock are in abundance.

Wheat, corn, rye, barley and clover seed is raised here in large quantities. Farmers are using the best agricultural implements, and thereby labor to the best advantage.

Vegetables are grown to a great extent, and our hall showed at each fair that our farmers are not neglecting the garden.

The household department and floral hall, devoted to the ladies, is each year a good show; filled with the handiwork of the good housewives and fair daughters of the county; and its beautiful pictures, bouquets, wreaths of flowers, coverlets, quilts, blankets, bread, butter, preserves, jellies, etc., show the interest taken by them in our fairs.

The future prospects of the Society are good, and all our people are taking a great interest in forwarding its plans and objects. We think the continuation of our fairs will bring the manufacturers, producers, and consumers into close proximity to each other, and is well calculated to promote the interest of the industrial class, increase the prosperity of our county, and eventually secure great good to all.

MONROE COUNTY.

In conformity with the rules and regulations of the State Board of Agriculture, I herewith present my annual report in regard to the condition of agriculture in Monroe county. The principal crops raised are wheat, rye, oats, corn, tobacco, potatoes, and hay. The potato crop last year was very short, owing to dry weather. We are still troubled some with the potato bug, but it did no damage last year. There was a fair yield of grain, which will compare favorably with former years. Tobacco raising receives more attention than anything else, to the detriment of the soil, be it said, with very little attention being given to fertilizers. In some parts of the county sheep raising is receiving considerable attention. Some of the finest blood Merinos have been purchased, and if I mistake not, you will have a good report from this department in the near future. Our society is still in debt a few hundred dollars, but by the aid of the State fund we will be able to pay about fifty per cent. of the indebtedness. We are now contemplating the purchase of new grounds, which may incur an additional debt. Our people generally take considerable interest in the society, and we think that by good management we can make it more successful than heretofore. We have been paying rent for the last fifteen years, which has been a drawback all the time, and now if we can succeed in buying grounds, and save the rent, we will be in a condition to make our society more of a success financially.

MONTGOMERY COUNTY.

The principal crops in this county are corn, wheat, and tobacco. The corn crop was largely in excess of previous years, and the average yield about 70 bushels. Wheat yielded remarkably well, being an average of about 20 to 25 bushels to the acre. The tobacco crop was unusually large and of good quality.

The season was not remarkable for any peculiarities, and there were no destructive insects, excepting only the potato bug, which did considerable damage, and the fly in the wheat, which, however, did not do much damage.

MORGAN COUNTY.

The twenty-sixth annual fair of the Morgan County Agricultural Society was held on its grounds near McConnelsville, September 17th, 18th, and 19th. The exhibition, including all the departments, was very fine. There is probably no county in the State where all the industrial and agricultural interests are receiving greater attention at the present time than in Morgan county. Our people are realizing more than ever the necessity of a general interchange or expression of opinion as to the best mode of farming, and the best kinds of stock to introduce, and nowhere can this general information be obtained more profitably than at these annual gatherings. The past season has been unusually favorable for the farming interests. Crops of all kinds have been abundant.

The principal crops raised in the county are wheat, corn, oats, and potatoes. It has been a great many years since the wheat crop, both as to quantity and quality, has been as fine as the present harvesting. Some fields of ten and twelve acres have had an average yield of 40 bushels per acre. One crop of 75 acres had an average yield of 33 bushels per acre. Corn, oats, and potatoes were a very fair average yield. Hay crop good, very good; in fact we have had two or three years in succession of a very large yield of hay. Two years ago we thought we should not soon see again such a yield of apples, but the present yield was equal if not larger than two years ago, and very excellent fruit. All the departments were well represented.

In other annual reports we have spoken of the enterprise of our farmers in the introduction of fine cattle and sheep, but at no fair held in the county has this fact been more apparent than at the present fair. We can boast of as fine cattle and sheep as are raised in any part of the State. What we have said of cattle and sheep may also be said of hogs. Morgan county is not behind in stock-raising. We have never had a greater or finer display of stock, was a common remark during our fair. We had about twelve hundred entries in all. Of cattle: Shorthorns, 40; other kinds, 25. Horses, including all classes, nearly 200. Sheep and hogs, 125. Poultry, 40.

We have heretofore spoken of the introduction of foreign fertilizers and the practical advantages of the same. Our farmers are using these fertilizers more and more from year to year, and as the result, there has been a marked improvement in the yield and the appearance of the grain.

MORROW COUNTY.

The year 1878 was truly a year of plenty, and this county received its full share of agricultural blessing.

The principal crops raised in this county were wheat, corn, oats, hay, and potatoes. Wheat was splendid in quality, and averaged about from 20 to 25 bushels per acre. Corn below an average—about 40 bushels per acre. Oats were generally light, and the yield also 40 bushels. The average yield of hay was from one and a half to two tons per acre. The quantity of potatoes was below an average, the dry-rot, especially in Peachblows, being rather extensive all through the county.

A fair estimate (with the help of statistics) of the quantity of wheat raised last year would be about 220,000 bushels, or 60,000 bushels more than the year before. Of corn, about 90,000 bushels; no increase. Oats, 50,000 bushels; no increase. Hay, about 60,000 tons; an increase of 20,000. Potatoes, about 40,000 bushels, a decrease of 45,000 bushels.

The season of last year was all that could be wished for; as a proof, the large crops. The fall of '78 was rather wet—hence the damage to potato crop.

There was no damage done by insects, and no epidemics among domestic animals. Horses, cattle, swine, and sheep were in splendid condition, especially sheep, on which our farmers spend a great deal of attention. This is the 12th county in the State as to number of sheep; as to quality of wool, it compares most favorably with any county in Ohio.

The condition of our county society is improving steadily; the public take a great deal of interest, and we can truly remark that, by the aid of the yearly fairs, great improvements in stock, seed material, and improved implements, are taking place, and there should be nothing wanting to make these fairs a success in every respect, as the benefits derived are of great importance to all classes of society, and they surely outweigh every real or imaginary cause for dissatisfaction, set forth by the constitutional grumblers and fault-finders.

MUSKINGUM COUNTY.

A remarkable degree of success and prosperity has attended the efforts of the agriculturalist and horticulturalist in Muskingum county since our last report, and the soil has yielded up a plentiful harvest wherever intelligent and industrious effort has been made.

The season of 1878 has exceeded that of 1877 in results, the wheat crop having been unusually large and of excellent quality; the corn production less than an average crop. The hay crop was immense, placing that necessary article at remarkably low figures in the markets, many farmers selling their hay as low as five dollars per ton, and six dollars being the average paid per ton in this county. We herewith submit a statement of the principal crops raised in this county, the same being gleaned from the returns of the township assessors made in April, 1878, the returns being for the season of 1877, there being as yet no returns for the crops of 1878.

There are 414,787 acres owned in this county, and these are divided as follows:

Number acres of cultivated land	114,231
" " pasture land	214,156
" " wood land	82,844
" " waste land	3,556
Total number acres	414,787

But little complaint has been heard regarding the destruction of crops by insects, except the work of the potato bugs, and this does not seem to have been so severe as in preceding years.

A more intelligent spirit of inquiry and examination of the best methods of carrying on farm and garden work has characterized the farmers of this county during the past year. Agricultural publications are sought after and read, and numerous local and county organizations have been formed for the purposes of mutual benefit and research, and comparison of methods, exhibition of the products of farm, orchard, and garden. In these enterprises the ladies have taken great interest, and have greatly encouraged their husbands and brothers to more intelligent and diligent effort in their calling; and one of the results has been a greatly improved condition of society.

The thirty-second annual fair of the Muskingum County Agricultural Society was held on the 3d, 4th, 5th, and 6th days of September, 1878. The fair, as the preceding four or five years of this society, was a financial success; and while the entries were numerous in many departments, there was not the interest manifested in making an exhibition of the products of the farm as was desired by the directors of the society. The exhibition of horses was very large and fine, as also that of cattle and sheep. The display made in the ring on the last day of the fair, when all of the premium stock was paraded, was pronounced very fine, and gave the best idea afforded by the fair of what was being accomplished in Muskingum county toward the improvement of stock generally.

Our society is completely out of debt, and unincumbered—its beautiful fair grounds of forty-three acres, the building, and structures upon the same having been greatly improved, and the directors are resolved to still further improve the grounds, and add other buildings, which the increased interest in the fair, by the citizens generally, require.

NOBLE COUNTY.

The *principal* crops of this county are corn, wheat, oats, and tobacco, as also fruits, viz., apples, peaches, and the small fruits, and for home consumption potatoes, beans, and small vegetables. Of corn, the crop for 1878 was a full average and large acreage planted; the yield per acre will be thirty-five to forty bushels. Wheat, large crop sown and excellent yield—say near twenty bushels to acre. Oats crop was good for acreage sown, but not quite so large; crop sown, as usual. Tobacco, the amount planted was less than usual, and yield not heavy, but of fair quality. Potato crop, very light, much more so than usual; hard to give an estimate, as there is no general crop for market raised in this county. As to apples, the yield was very large, but has not been preserved, being badly rotted. Peach crop was good, full average; perhaps over the usual crop. Plums, larger crop than was ever harvested before in this county, and well matured. The crop of small fruits, consisting of pears, cherries, berries, etc., was of good quality, and full average yield. No insects were observed out of regular order, and crops were not disturbed; save perhaps the potato crop, being infested with the "Colorado potato bug," which are diminishing in numbers very perceivably.

OTTAWA COUNTY.

Our fair was a success, but not in numbers. The bad weather the week before had delayed the farmers in seeding, and they could not leave it to attend the fair, which made our attendance smaller than usual. We have added to our buildings Mechanics' Hall, 36 by 60 feet, and secretary's office, at the cost of over $400.

The crops have been remarkably good, wheat, corn, and hay more than usual. Potato crop small. Grapes fair, although much injured by the wet and extreme heat. The fruit crop was more than abundant, particularly apples. The eastern part of our county had a good crop of peaches. The Peninsula and Catawba Islands are setting peach trees by the acre, believing they will be a paying crop.

The farmers feel well satisfied with the year's success, although the price of corn and pork are below paying the labor of raising. I have no means of giving you average yields per bushel.

PAULDING COUNTY.

Our principal crops are wheat, corn, oats, and potatoes The following is an estimate of each raised, and the average per acre:

Wheat,	acres,	4,041;	bushels raised,	61,043;	average,	15	bushels per acre.
Corn,	"	13,911;	"	299,036;	"	21½	"
Oats,	"	4,462;	"	141,559;	"	31 2-3	"
Potatoes,	"	1,008;	"	52,566;	"	52	"

The previous season was very wet—some parts of the county had only half a crop. In fact the four last seasons have been wet. Insects have not been doing harm to any great extent.

The condition of our society is not as good as we would desire, owing in a great measure to the condition of the roads and partial failures of crops. The future prospect depends a great deal on the seasons until the county is thoroughly drained.

Farmers are backward in entering field crops. The last season one farmer (Mr. H. Underwood) entered one acre of corn, yield, 80 bushels.

In conclusion, would say the farmers in our county are somewhat behind their sister counties in the State; but as the farmers learn that only thorough draining will give them success in farming, then, and only then, will Paulding county bring forth what she is capable of producing.

PERRY COUNTY.

The Perry County Agricultural Society is in a more promising condition than it has been since its organization. Our fair for the year 1878, being the tenth annual fair, was more largely attended and a larger number of entries than at any former fair. The showing of all kinds of live stock was far in excess of any of our former fairs, both in numbers and quality, and especially is this true of cattle, sheep, and swine, which has been much improved in the last few years by the introduction of fine blooded stock of the best breeds, which we think has amply remunerated us for all the toil, trouble, and expense of keeping up our county fair. The cereal crops of our county consist of wheat, corn, rye, oats, barley, and buckwheat. Our wheat, in quality and quantity, this year exceeds any we have had for many years, in some instances thirty and more bushels per acre, yet the average yield of our wheat would possibly be below half this amount. The most prolific of the different varieties are the Fultz and Clawson wheats, and yet for making of flour we do not like these two as well as some other varieties. Corn, oats, and hay were the best we have had for many years. Apples, peaches, plums, cherries, and grapes were very good in quality and quantity. The potato crop in the aggregate not so good as in some former years. Many of our farmers have been experimenting with some of the commercial fertilizers, and the results have been in most instances quite satisfactory.

It has become a recognized fact that there is still a need of more intelligent and scientific farming by our farmers. This is comparatively a small county, the southern part of which contains immense mineral deposits, viz., coal and iron ore. The coal seams are from three to twelve feet in thickness, the iron ore from one to four feet and more; hence the southern part of our county has become an immense mining and iron manufacturing district, giving employment to a large number of laborers, and a good market for the farmers' products.

PICKAWAY COUNTY.

The twenty-seventh annual fair of the Pickaway County Agricultural Society was held on the fair grounds at Circleville, Ohio, on the 1st, 2d, 3d, and 4th days of October, 1878. The display in all classes was good. This was notably the case in draft and in light harness horses, while in thoroughbred cattle the show was perhaps not equaled—certainly not excelled—by any of the county fairs throughout the State. The display of fruits was large and varied, and notwithstanding the spirit of opposition evinced by a portion of the members of the County Horticultural Society, this department lacked nothing to make it, as it proved, a complete success. The artistic arrangement of the profusion of plants and flowers made Floral Hall a picture of loveliness and a bower of beauty. The competition in the entries of wheat, rye, oats, and other small grains was not spirited, but the number of entries and the large display of corn demonstrated the fact that Pickaway county has lost none of her prestige as the corn county of the State. The agricultural implement department was well filled, and the manufacturers of labor-saving machinery for the use of the farmers showed, by the large display in that class of implements, a thorough appreciation of the benefits of this method of advertising. The preserves, jellies, cakes, bread, and other specimens of domestic cookery were plentiful, sweet, and substantial. The exhibition of vegetables was good, the display of potatoes being remarkably fine. The entries of horses in the speed classes were not numerous, but the races were exciting, well contested, and a creditable display of "time" was developed.

The attendance of visitors during the fair was good, the weather all that could be desired, and the amount of money derived from all sources sufficient to pay all premiums and current expenses, besides paying nearly all of a former indebtedness, leaving the society in good condition and with encouraging prospects for future success.

Crops.—The crops in this county for the past year were unusually fine, the yield of wheat being far above the average of the past ten years, the yield, as reported, ranging from twenty to thirty bushels per acre. An exceptional large yield was that of two acres of land on the farm of Dr. F. M. Black, of Darbyville, from which one hundred and four bushels of good wheat were obtained. The average yield of wheat for the county is somewhere in the neighborhood of twenty bushels per acre. The corn crop was also above the average, both in number of acres planted and in the number of bushels produced. Rye, a crop hitherto almost unknown in this county, was cultivated to some extent the past season by a few farmers, with very satisfactory results. The production of sweet corn, by Sears & Co., near Circleville, was last year, as it has been for several years, very remunerative to the proprietors, besides furnishing employment to a large number of persons during the growing of the crop and in the drying and canning of the corn. Broom-corn has been for years largely cultivated in the vicinity of Circleville, and the crop of this highly useful article for the past year was fully up to the average. The crop of grass was good, and hay is abundant, and to take it all in all, the past season has been one of unusual productiveness in all classes of grain, fruit, and vegetables, and it only requires an advance in the present ruinously low prices of their productions, to make the farmers of Pickaway county supremely happy.

PORTAGE COUNTY.

The thirty-second annual fair of the Portage County Agricultural Society was held on the fair grounds at Ravenna, September 23, 24, and 25, 1878.

Entries not quite as large as usual, but display in hall much better, our merchants, manufacturers, and tradesmen making large displays of their goods and wares, but not entering for premiums.

The show of horses, Durham and Jersey cattle, and Berkshire swine were good; of poultry probably the largest and finest ever shown in the county, there being sixty-seven entries, and of the best; two hundred and twenty-six entries of fruit, quantity and quality equaling the display of many of our State fairs.

During the past year the society erected a new Floral Hall, and notwithstanding the unfavorable weather of the first two days of fair, the last day was pleasant and the attendance good, and we are substantially out of debt, and the people taking a renewed interest in the welfare of the society.

This has been a prosperous year to the farmers in this county. The dairy interest has suffered by reason of low prices for butter and cheese, but feed has been plenty and cheap, so that the quantity produced is larger than usual. The crop of hay was large; all kinds of grain good; potatoes, not more than half our usual crop. Stock of all kinds healthy and in good condition.

PREBLE COUNTY.

The twenty-seventh annual fair of the Preble County Agricultural Society was held at Eaton, September 24th, 25th, 26th, and 27th, 1878, open to general competition, except on field crops, which is confined to the county.

We offered the following premiums on field crops, samples of the product to be exhibited at the county fair, with a full statement of the mode and cost of cultivation:

Best one acre of	corn,	first premium	$20 00;	second premium,	$10 00
" "	wheat,	"	10 00;	"	5 00
" "	barley,	"	6 00;	"	3 00
" "	flaxseed,	"	8 00;	"	4 00
" "	oats,	"	6 00;	"	3 00
" "	potatoes,	"	10 00;	"	5 00

Minimum number of bushels as follows:

Corn, 100 bushels to the acre; wheat, 30 bushels to the acre; barley, 50 bushels to the acre; flaxseed, 12 bushels to the acre; oats, 50 bushels to the acre; potatoes, 200 bushels to the acre.

None of the above crops were reported for competition.

The principal crops raised in the county are as above named, including tobacco.

Wheat—the acreage was light the past year; cause, light crops the past three or four years; one-third short of former years in acreage; however, the yield and also the quality was good; the yield the largest ever raised in the county, or at least for many years. Some fields average as high as thirty-three and thirty-five bushels per acre. The probable amount of acres that was harvested the past season was about 25,920; average yield per acre, about fifteen bushels; total, 388,800 bushels. Price per bushel, eighty-five cents.

Corn—averages over an average; yield and quality not as good as the previous year. Probable average, 51,840 acres, at an average of thirty bushels per acre, making a total of 1,555,200 bushels; price per bushel, twenty-two cents.

Barley—about the usual amount harvested; not a large amount sown; yield, good; quality, fine, with a few exceptions on the low grounds.

Flaxseed—acreage large; I think the largest ever sown in the county. The yield was very good, running from seven to fifteen bushels per acre.

Oats—about the usual quantity sown. Yield per bushel, about the same as in former years.

Potatoes—not as many planted the last year as in former years, on account of low prices. Crop not large; few in the hill, but of fair quality.

Tobacco—considerable raised in the east part of the county; was a fair yield and of a fair quality. I think it impoverishes the land more than any other crop raised in our county.

Fruit Crop.—The apple crop was fair. Early varieties did not keep well as usual, though the later varieties are keeping moderately well. Pears was an average crop. Peaches none. Plums a large crop, and of a fine quality. Smaller fruits, such as gooseberries and currants, were all destroyed by a small, green worm. The grape crop was a very fine crop in quantity and quality.

The Hessian fly made its appearance in some fields of wheat over the county, damaging the crop to a certain extent. The chinch bug did more damage to the small grains than did the fly.

PUTNAM COUNTY.

The principal agricultural productions of Putnam county are wheat, corn, oats, grass (or hay), potatoes, and onions. The last two mentioned products being most extensively cultivated in the north-west portion of our county years ago known as the "Black Swamp," which having been thoroughly drained has become the most fertile part of the county, producing enormous crops of potatoes and onions; and, in fact, seems to be adapted to the various crops grown on other lands in this portion of the State. This, with the yearly increasing tile drainage so general throughout the county, will largely increase the agricultural productions of Putnam county. I have no statistics enabling me to give an estimate of the products of this county, but feel warranted in saying that this year's wheat crop will show an average of thirty-three and one third per cent. over last year. Corn, perhaps, twenty per cent. increase. Oats about an average. Potatoes one-half crop.

Our society is in a promising condition for the future.

RICHLAND COUNTY.

The principal crops raised in the county are wheat, corn, oats, and fruit.

Wheat—the estimated crop for the year is 500,000 bushels, or more than an average. The yield being fifteen per cent. greater than in 1877, and acreage larger by five per cent. The average yield per acre is eighteen bushels.

Corn—the crop for 1878 is about 700,000 bushels, and the yield thirty-three per cent. less than in 1877. This decrease is owing to the heavy rains and continuous wet weather in July and part of August. The product was two-thirds of a crop, and the average twenty-three bushels per acre.

Oats—the crop of 1878 is about 600,000 bushels, being three fourths of the yield of 1877. The same condition of things obtained with this cereal as with corn. The average was twenty-five bushels per acre, with about the same acreage as in 1877.

Apples—the yield of the fruit was unprecedented, both in quality and quantity. The estimated crop is 600,000 bushels, a large portion of which was exported or manufactured into cider or vinegar. Seventy thousand barrels of the fruit were packed in Mansfield.

The season, with slight exceptions, was extremely favorable for wheat and fruit. As regards corn and oats the exceptions have already been noted.

Destructive insects—none appeared to destroy the grain or injure the crops.

The general condition of our society, in view of its previous history and condition, is very favorable. There has been a large increase in membership, and greater interest is being manifested in its prosperity.

The future prospects are excellent, and the influence of the society in the development of the industries of the county are becoming more apparent every day.

The premium crops, as represented at our late fair, were confined to two: James Brown, of Lexington, reporting a yield of 359 bushels of wheat from 7 7-8 acres, or 45 35-60 bushels per acre, and M. Carter 100 bushels wheat from 2½ acres, or 40 bushels per acre.

The general characteristics of the county indicate increased prosperity among our farmers, the low price for produce being more than compensated by the increased production, and the indications are that the prosperity is permanent.

ROSS COUNTY.

The Scioto Valley Agricultural Society, composed of the counties of Ross and Pike, held its last annual fair on September 3, continuing three days, at Chillicothe. The fair was not a success either financially or in exhibits.

The principal crops of this county are corn and wheat. Last year there were about 3,000,000 bushels of corn grown, and about 250,000 bushels of wheat; average yield per acre, 12 bushels; average yield of corn about 36 bushels per acre. Season good.

The Society is not in a flourishing condition. Farmers do not seem to take the interest in it that they should; are afraid to bring their stock and crops to the fair for fear that their neighbor will get the premiums, and they will then be out a dollar or two. All they seem to be after is the money. The future prospects of our society is far from being bright, and it must inevitably go down, unless the farmers rally to its support. To illustrate the lack of interest that is manifested by our farmers in the advancement of agriculture, it will be sufficient to cite one case, viz.: At the annual meeting held December last, for the election of officers for the ensuing year, one or two of our more enterprising farmers suggested the propriety of organizing a farmers' club. The members acted upon the suggestion, and appointed the meeting for organization on the first Saturday in January. At the time appointed, we had all the way to three farmers present. As spring opens, I hope the interests may look up.

SANDUSKY COUNTY.

The fair of 1878 was held on the society's grounds at Fremont, Ohio, October 1, 2, 3, and 4 The weather, so necessary to make it a success, was all that could be desired, and drew a very large attendance, it being estimated that at least 10,000 visitors were in attendance on the third day of the fair.

The grounds of the society (undoubtedly one of the finest in the State, beautifully shaded, and its commanding height affording a fine view of the surrounding country) was in excellent condition, as was also the race course upon which the running and trotting horses held full sway. The results, from a financial standpoint, were a grand success, as the accompanying statement conclusively shows; indeed, with another as successful a fair, it is hoped to entirely free the society from indebtedness, and enable us to make further needed improvements. During the year, the society has made permanent improvements, aggregating upward of $700, which includes a new judge's stand and president's, secretary's, and treasurer's office, the latter, a very nice structure, situated at the entrance to the grounds

The exhibition of this year, though not quite as large in the number of entries, was of a better class than that of 1877, especially noticeable in agricultural implements and machinery, an important feature in this department being the exhibition of a new binder on a piece of ground set aside for the purpose. The binder seemed to do its work well, and to the satisfaction of all present. In the departments of horses and cattle, the entries were large, and made considerable competition. Sheep, hogs, and poultry were also largely represented, and were superior to any heretofore shown. The entries in farm products were very light, though of superior quality. We can hardly account for lack of interest taken in this department. The entries in fine art hall were also very much below our expectation. We hope in the future, by a liberal increase in our premium list, in this as well as in all other departments to greatly add to the number and class of our exhibits.

In regard to agriculture in our county, I will say that the crops of this year were generally good, especially the wheat crop, which was an unusually large yield. I would estimate the acreage upwards of 40,000 acres, with an average of 22 bushels per acre. The principal varieties are Gypsey, Mediterranean, Clawson, and Lancaster. I find considerable difference of opinion regarding the quality and yield of the different varieties. Gypsey and Lancaster being generally preferred, though in some parts Clawson has done remarkably well. From 40 to 45 bushels per acre, in small lots, are the best reports heard from.

The corn crop did well in some parts and very poorly in others; it was considerably damaged by wet weather. The acreage was probably upwards of 30,000, with an average of about 30 bushels per acre.

The oat crop was greatly damaged by the wet weather, and was hardly a good crop. The acreage was very small; I think scarcely 10,000 acres, and will hardly average over 33 bushels per acre.

The hay crop was very large, and nearly all well gathered.

Potatoes, usually a very good crop, was a failure, owing to excessive wet weather. Other vegetables generally were in great abundance.

Fruit of all kinds, and especially apples, yielded very largely. The long continuance of warm weather, however, caused a great many apples to decay early from being over-ripe.

The cultivation of bees is becoming quite an industry in our county, and is meeting with good success. The society, recognizing its importance, added the following resolution to its premium list:

Resolved, That, to encourage an industry not heretofore fostered, the society offers a premium of $10 to the owner of the five swarms of bees producing the greatest amount of profit in the season ending October 1, 1878; statement to be verified under oath.

The total amount of indebtedness of this society is $1,694.61.

SENECA COUNTY.

The farmers of Seneca county take pride in knowing, when they look at the statistics of the county, that they are amply rewarded for their last year's labors.

The wheat and corn crops were more than an average; the oats about an average; while the present grain crop is an increase over that of 1877. The quality is very fair, and corn is above the quality of 1877. Fruit also was abundant, and is judged by the pioneers as being of a finer and better quality, owing to the improvement in cultivating the same.

Below you will find the estimates, as near as can be obtained:

	Acreage.	No. bushels.	Av. per acre.
Wheat	51,780	1,009,771	19.3
Oats	17,938	626,079	35.0
Corn	40,548	1,391,197	34 3
Meadow	20,158	23,384 tons.	
Clover-seed	......	15,856 bushels.	
Potatoes	1,414	153,000 "	
Butter	......	747,096 pounds.	
Honey	......	218,716 "	
Wool	......	244,287 "	

The Hessian-fly and the midge are about the only insects that are destructive to wheat. The damage in the county has not been much. The potato crop suffered considerably from the Colorado bug.

Better varieties of grain and fruits are annually introduced. Farmers' sons are making rapid progress in agriculture, and the general wave is favorable for good in the future.

The condition of the society is favorable, it being in debt prevented it from making as fine improvements as if it were out of debt; but with the present indications and the hopes of the future, it may rank among the first of the State.

SHELBY COUNTY.

The principal crops raised in the county are wheat, corn, oats, rye, barley, flax-seed, and clover-seed. The average yield per acre has been estimated, by competent persons, at 18 bushels for wheat, 40 for corn, 25 for oats, 20 for rye, 25 for barley, 10 for flax-seed, and 1½ for clover-seed. The yield of oats was the largest that has been known in this county for many years, but was of a light quality. The barley crop was injured to some extent by the frost, which caused the yield to be less than it would have been had there been no frost. The crop of flax-seed was the largest ever known in the county. There was but a medium yield of potatoes, of a fine quality, and producing about 100 bushels to the acre. The crop of apples and small fruits was never more abundant, and was of a quality of which we are pardonable in saying we are proud of it.

The most striking characteristics of the past season was a large yield of all the products of the farm in comparison with that of former years. The season was generally a favorable one in all respects. The labor of the agriculturist was abundantly rewarded. As far as has come to our knowledge, there has been no destructive insects injuring the growing crops.

The institute is, at present, in a very good condition, and the prospects for its future usefulness and success are very flattering indeed. We have no statement to make relative to "premium crops," from the simple fact, that no exhibition of the kind was either proposed or made at our late fair.

The state of agriculture is certainly in a flourishing condition. Our farmers are working their farms better than in former years. The laying down of tiling, the making of ditches, and the building of a much better class of dwelling-houses and other buildings, and the erection of fences show conclusively that the agricultural interests of the county are very much in advance of other years.

The fair for the year 1878 was held on the grounds of the institute, on the 1st, 2d, 3d, and 4th days of October, and was, without doubt, under all circumstances, a decided success. The total number of entries was 1,320, an advance of more than fifty per cent. over those of last year. The entries of the products of the soil, and of jams, jellies, etc., were very far in advance of former years, thus plainly indicating an increased feeling in favor of the success and advancement of the institute by our agriculturists, their wives, sons, and daughters. The attendance at the late fair was very flattering indeed, particularly on the third and fourth days. Much interest was manifested on the closing day by an increased attendance, owing, no doubt, to the presence of the Governor of the State, R. M. Bishop.

The offerings of the different grades of cattle and hogs were much in advance of former years, and called forth the commendation of all visitors. The display of fruits, needle-work, farming implements, and machinery was truly commendable. The offerings of horses was better than that of former years, showing an increasing care exercised in the production of good stock for general purposes, draft, and roadsters.

The total amount of receipts, from all sources, were $1,829.70. The total amount paid for premiums and all other expenses, were $1,757.78.

STARK COUNTY.

The twenty-ninth annual fair of the Stark County Agricultural Society was held on the 1st, 2d, 3d, and 4th days of October, 1878. The weather during the entire fair week was all that could be wished for; probably not during the lifetime of the organization was the society favored with such exceedingly pleasant weather, and in consequence we had an unusually large attendance and an extremely fine exhibition. From records at hand, we never had such a large and varied number of entries. From the condensed statement it will be seen that after paying a large amount in premiums and permanent improvements, the latter amounting to upwards of seven hundred dollars, we come out with a small balance in the treasury.

I think it advisable that all county societies should make a statement of their financial condition, and embody the same in their general report; a classification of the entries in a condensed form should also accompany said report.

Our permanent improvements consist chiefly in the erection of a gallery in the dome of our floral hall, for the display of fruits and domestic articles. Our managers were slow in consummating their plans for the erection of this addition, fearing lest it might not prove agreeable, but I can say that it has given universal satisfaction. It not only adds largely to the exhibition space, but is an ornament to our hall. Probably few halls of this character in the State are better in their arrangement than ours, and affording as much space, but spacious as it is, it became necessary to put up a temporary building during our last fair for the display of vegetables.

The display of fruit was never better, the three hundred and thirty-five entries representing upwards of seventy-five varieties, besides many non-enumerated. Our fruit-growers have become earnest in their work, tending toward a perfect culture, and have organized a horticultural society, which, though in its infancy as yet, is in good working order.

Our mechanical department was probably not up to the standard, owing to the want of a building for that purpose, though we had upwards of a hundred entries in this department, representing many of the most improved and labor-saving machinery. All departments of the fair were fully represented. A finer display of horses, swine, and sheep we never had. The cattle department did not come up to the standard, though the entries consisted of the finest thoroughbreds. The principal breeds of cattle are Shorthorns, Alderneys, and Holsteins. In connection with this, allow me to state that we confine our exhibition entirely to our own county, except in sweepstakes of stock and poultry, and this accounts for our falling a little below some of our neighboring counties in the number of exhibitors and entries in the stock department, but in so doing we have the satisfaction of knowing, when we make a survey of the stock, that it is the production of our own glorious old "Molly Stark." We may be a little selfish in this respect, but our plan of confining our agricultural fair to the county has proven a success.

Query: Can a county agricultural society which throws its doors open to the world hold strictly a county agricultural fair? We think not. We might give our reasons for thus confining our exhibition to home production, but space will not now permit.

Our membership for this year is six hundred and sixty-four—higher than it has reached for many years. Our mode of reckoning memberships differs from some societies. With us the right is vested in the purchasing of a card, which holds good for one year. There is one noticeable feature in the reports of the various societies. I refer to competition of "field crops." There is either an omission of reporting in due form, or a failure of exhibition. This is not as it should be. We fall short in this very essential industry. I feel proud to say in behalf of our managers, that our farmers come up annually with their products and mode of culture. This is a subject that should receive the attention of the State Board. If this industry was properly reported, it would be the means of imparting information from one to the other, the result of which would necessarily prove beneficial. (See statements herewith, as also statements on same subject in published report for 1876, pp. 136-7-8 and 9.) I call attention to this with a view of drawing forth full reports from other societies, to the end that means may be furnished to the furtherance of this industry in our own county. In submitting our reports we are too apt to comment altogether on our successes, instead of searching so as to bring to the surface those things in which we are deficient and wanting.

Science in agriculture is a thing to be sought after, and many of our farmers are waking up to a sense of duty in this respect. It is the aim of a county agricultural society to put forth every endeavor to promote that interest. Therefore we should not be selfish in our experience, but make free use of interchanging views, noting observations, picking up fragments here and there. By others' experience we may profit.

In former reports I have referred to our mechanical industries. But few counties in the State, if any, are better represented in this line. Millions of dollars are annually expended in the production of machinery to lighten the burden of bringing from Mother Earth her rich bounties Mining adds largely to the wealth of our productions.

The principal crops raised are wheat, corn, oats, hay, and potatoes The average per acre of these for the past year may be safely stated as follows: Wheat, 25; corn, 75; oats, 40; hay, 1½ tons. Our potato crop was far below the average. The Early Rose, for early crop, was a fair yield. The late was damaged by the bug and drought, the Victor being the best yielder. As an early potato we have not found anything yet to supplant the Early Rose; and the Snowflake, for quality as a late potato, is considered the best.

There was nothing during the past season showing any striking characteristics as compared with the previous season, excepting the yield in all cereals was considerably greater, and the quality fully up to the standard. No destructive insects interfered with the crops excepting the potato.

A few pert questions come from Guernsey county—one is, "Who can have an agricultural fair without a horse-race?" I desire to revive that query, and on behalf of our managers ask an expression from other societies, in next report, on this subject. It is a subject which merits the consideration of all agricultural societies—a subject which gives us trouble to a certain degree each year; but how to avoid it has never yet been solved by us. Would it be wise to drop it from our catalogue? Another query is from the same—"What shall be done to make our fairs more successful?" I answer, do as we do—let every member of the board of managers (and we have seventeen—one from each township) put his shoulder to the wheel, work up the interest in his own locality; teach the people that the agricultural fair is a fair of the people and for the people; inculcate the true idea—weed out all that is obnoxious and not within the scope and meaning of agricultural industries, and my word for it, you will have successful fairs. A great deal might be said on this subject, but space will not permit.

In conclusion, I will state that our prospects are good for continued success to the promotion of our highest industries.

SUMMIT COUNTY.

Our twenty-ninth annual fair was held on our new fair grounds (named "Fountain Park"), on the 2d, 3d, 4th, and 5th of October, 1878. The weather during our fair was without fault, and as a result of earnest effort and hard labor on the part of the officers of the society, decided success was attained. The first day, in our county, is devoted entirely to entries, without charge for admission or for articles entered for premiums. The fair proper commences on the second day, although our entry books are not closed until nine o'clock A.M. of the third day.

Our fair grounds, consisting of about fifty-two acres, are situated mostly within the city limits of our city of Akron, in the valley of the Little Cuyahoga River, the river running through the entire length of the grounds, and the grounds form a regular amphitheater, the north and south sides bounded by the bluffs or hills arising from the bottom lands, and nearly uniting both at the upper and lower boundaries of our grounds. In the valley is located our race-track of one-half mile, and one of the best in the State, though compelled to cross the river twice by bridges. On the south-west and north sides of the track are located our fair buildings, consisting, on the south, of a rustic floral hall, on the west our mercantile and art halls, on the north dining hall, domestic and agricultural halls, with space, sheds, and tents for display of agricultural implements Our power hall, to be located on the south, is not yet built. It is not worth while to add further description of our grounds, more than to say that they are well shaded, with an abundant supply of both rain and spring water. Our grand stand, that will accommodate 2,000 persons, is located at the end of the "home stretch," on the south of the track, and opposite the judge's stand, and the track is graded nearly to a level plain.

The display in all the departments was all we could ask. Our stall-room, especially devoted to fast horses, and furnished with box stalls, will accommodate twenty horses. There are about one hundred stalls for horses entered for premiums. Our cattle stalls number about one hundred, and are built with a view to comfort and convenience. We have also ample provisions for the accommodation of sheep and hogs. All were filled, and yet we had not sufficient room. All of the halls were filled with appropriate articles and productions, and a better display in all the different departments has never been exhibited at any county fair in the State. There was nothing aside from the legitimate business of a county fair in the way of attraction, except a single trapeze balloon ascension, to draw the people, and yet on the three last days of the fair, as shown by our books and receipts at gates, the number on the grounds was—on the second day, 6,000; on the third, 20,000; and on the fourth, from 10,000 to 12,000. Our surplus, after paying all legitimate fair expenses, was something over $3,000.

Our grounds, with the improvements, are worth from $20,000 to $25,000, on which there is a bonded and mortgage indebtedness of $14,500. We are so located with reference to the three railroads passing through our city that persons desiring to attend our fair, and coming upon either of the roads, can be left within one minute's walk of one of the entrance gates.

Our society is in good working order, with a membership of over 1,500, and is in the hands and under the control of the people, and all feel an interest in keeping up to the standard attained. The sale of spirituous liquors and beer, as also all gambling wheels or devices for robbing the people of their money, are excluded from the grounds.

Our police department was well sustained, and those having this matter in charge done themselves credit, and I speak of this more particularly, as our police were taken from the country, and were unaccustomed to this kind of work.

In all the differant departments there was perfect harmony among the officers and directors. The object of all seeming to be to enjoy a good time, and advance the interests of the society and its members.

TRUMBULL COUNTY.

The thirty-third annual exhibition of the Trumbull County Agricultural Society was held on the grounds of the society at Warren, September 17th, 18th, 19th, and 20th, 1878. In a financial point of view we were not quite as successful as some of our former fairs have been. We attribute this mainly to the great freshet the week previous to the time fixed for holding the fair. Much damage was done to the bridges and roads leading to our county seat, and destruction of property to those living along the Mahoning Valley, which cause, no doubt, had a tendency to somewhat diminish the number in attendance.

The exhibition of stock was unusually large and fully equal, and by many thought to be the best ever shown in the county.

The exhibitions in the other departments were a decided success, and from year to year we notice the interest throughout the county is becoming more general for an improvement in our annual exhibitions.

The Trumbull County Agricultural Society is one of the oldest societies in the State, and to the careful observer it is plain to be seen it has been of much value to the farmers throughout the county in stimulating them to an improvement in the raising of good stock, and a more thorough system of farming.

The production of cheese and butter and the rearing of stock is the main business of the farmer; consequently, a great portion of the crops produced in the county are used for home consumption.

We have no means at hand of knowing the correct amount per acre of the crops raised.

Corn was an average crop.

The wheat crop of 1878 was much better than the average yield of former years. Some late sown fields were considerably injured by the Hessian fly; but on the whole, Trumbull county produced a much larger yield than it has for several years past.

The yield per acre of oats will be somewhat below that of last season.

The hay crop was fully an average with former years.

Early potatoes yielded well, and usually of a good quality; while late potatoes were, in many instances, left undug in the field, owing to the general prevalence of the rot.

There was quite an increase in the acreage of flax the past season; the yield per acre, we should judge, was fully equal to the average of former years.

TUSCARAWAS COUNTY.

The Tuscarawas County Agricultural Society held its annual fair at Canal Dover, October 1st, 2d, 3d, and 4th, 1878. The weather being very favorable, the attendance large, gave us one of the best fairs ever held in the county. Our grounds are now in capital order. The buildings all new, and the debt which seemed so formidable a few years ago has now been reduced to about $200, which, with a faverable season next fall, can be paid off and leave a balance on hand for further improvements. Of late years we have been building, annually, permanent stalls, until the number has been increased to nearly two hundred, all well inclosed, with good roofs. The former manner of providing these accommodations was to hire the lumber of our lumber dealers, at a rate per thousand, and return it at the close of the fair, the society to make good all loss. The enormous bills that accrued in this way necessitated a reform, and we now find that we can build a great many conveniences with the money that was formerly used in the way of paying rents.

Our county fair has truly become a county institution, and although we have our usual number of old fogy croakers, with their unpleasant remarks, to contend with, yet the people generally recognize it as a permanent institution, and worthy their encouragement and support. Many look forward to it as a means of communicating with their more distant friends, as the common understanding is we will see them at the fair;

others, more practical in their observations, are anxious to see all the new improvements, and a needed purchase is frequently postponed until fair time, when they can see which is the latest improved and most highly recommended article.

We have a class of exhibiters common, I presume, to all localities, whose labor I scarcely know whether to commend or discourage (they may be styled professional in their way), who rummage the premium pamphlets from beginning to end, and endeavor to fill up all the entries, with the hope that theirs may be the only article of that especial class, and thus reap the reward with articles that are not always really meritorious. Others, again, will endeavor to exhibit the same article year after year, and take premium after premium. But these are only trifles, and must be patiently borne with. To give our visitors a pleasant time, we always endeavor to have a variety of amusements. Unless a person is particularly interested in some article or variety of articles, a passing glance is all they bestow, and time soon becomes irksome, and their conclusions are that it is a poor fair, when the real aim and intention of the occasion has been highly creditable. To obviate this feeling and make the fair enjoyable for all, we this season engaged the services of Miss Lulu Roze, the child walkist. For twenty-five dollars she walked twenty-five miles—ten miles on the second, and fifteen on the third day of the fair. This drew an immense crowd, and proved highly satisfactory.

The entries were larger in number than any previous year, and were fairly divided in the different classes. I noticed excellent samples of wheat from the new varieties lately introduced—Clawson and Fultz—and though the millers claim they are very inferior for flouring purposes, it is thought they will improve in this particular as they become older to the country. Their yield is fully one-third greater to the acre than the Lancaster, French Mediterranean, or Blue Stem. This wheat was introduced through the agricultural department at Washington. I also noticed in the vegetable hall several new varieties of potatoes from the same source, which, if the quality equals the appearance, must add greatly to this branch of farm products.

The stock lists are showing a rapid improvement, especially in cattle and hogs. The former were in great numbers, and the common exclamation was, "I did not know that Tuscarawas had so many fine cattle." Our hill farmers are turning their attention more to cattle, and keeping fewer sheep. Wool has depreciated so in price that it scarcely pays the producer, especially where lands are becoming valuable and pasturing range limited; yet there are many fine flocks of sheep of good blood, generally Merinos. The long wools have been dropped.

Horses are always foremost at agricultural shows, and here, as elsewhere, the center of attraction is the horse-ring. It certainly is not the intention of the directors to encourage horse-racing, but in order to be self-sustaining financially, they must permit a certain allowance of the national sport. Our horse breeders, as a general rule, endeavor to raise heavy draft horses, as more suitable for the eastern markets, and are alway ready sale at good prices, while the smaller strains, unless speedy, are never in demand

The wonderfully low price of pork, and the good local demand for corn (forty-five cents per bushel), has created quite a panic among the farmers, who have nearly cleaned out their pens, and their surplus corn is sold.

The past year has been a very fruitful one to the farmer. Wheat was splendid on hill valley, and bottom, many fields averaging forty bushels per acre. Corn on low lands extra—uplands injured somewhat by the drought. Oats good, but badly lodged. Hay crops large, but difficult to save, on account of frequent showers. No buckwheat. Rye excellent. Large quantities of clover and timothy seed. Apple and peach crop enormous.

UNION COUNTY.

Our annual fair was held on the grounds of the society, just outside of the city limits, on the 1st, 2d, 3d, and 4th days of October. The weather was as pleasant and favorable in every respect as could be asked, and the crowd in attendance the third and fourth days was very large. The receipts from all sources were $3,296.75. There were about 1,800 entries made. Our board is composed of active and energetic farmers and stock breeders, representing as nearly as practicable all parts of the county, and during the past year they have taken unusual interest in the matter, and in fact there are few, if any, well-to-do farmers in the county who do not take an interest in the welfare of the society.

For several years Union county has taken much pride in her fine horses, and she still keeps up the interest which has made her one of the first counties in the State in this regard, and a very large display was made in this department this year. For the last few years a number of our stock men have devoted much time to the raising of thoroughbred cattle, and that department this year was filled with some very fine cattle, which is certainly a very great improvement over former years.

In the sheep department there was nearly twice as many entries as at any former fair, and the quality was much better. During the last year many of our farmers have been improving their flocks by the purchase of fine wool sheep from Vermont. A very large number of hogs are fatted in the county annually, and are of a very good quality.

Our county was this year blessed with large crops of almost everything. Wheat averaged about 20 bushels per acre, and a large crop of all kinds of fruit, as was shown by the greatest display ever exhibited in the county. The display of farm machinery was very large. The grounds of the society consist of about 40 acres of land, worth at least $200 per acre, and we are out of debt, except for a few acres of ground purchased this year. Our farmers feel that the fair is theirs, and they take hold of it with a determination to make it a success, and consequently our fair has become well established.

VAN WERT COUNTY.

The annual fair of the society was held on the 17th, 18th, 19th, and 20th days of September, 1878, on the society's grounds, and would compare favorably, both in attendance and in number of entries, with fairs of the past three years.

The display of horses, cattle, sheep, and hogs, although they fell short in the number of entries from former years, in quality of stock was equal to any. The display of grain and potatoes was good in number of entries and in quality; also an excellent display of fruit. We had no entries of field crops. The fruit crop in our county was the largest for many years, except probably peaches.

The principal products of our county are wheat, corn, oats, rye, potatoes, clover-seed, timothy-seed, and flax-seed. The wheat crop was probably below the average yield per acre of last year, but the aggregate exceeded any former year, amounting to about 214,365 bushels, the average yield per acre being about 20 bushels. The corn crop was not so good as last year, being injured by heavy rains in June, the yield per acre being about 40 bushels, and the entire crop being about 700,000 bushels. The potato crop was also injured by wet weather, and in some localities by the Colorado beetle, the yield per acre being about 50 bushels. The oats crop was a fair yield, averaging about 50 bushels per acre—total, about 280,000 bushels, though the grain was rather light. Clover, timothy, and flax seeds a fair crop.

The general condition of the society is pretty good. The indebtedness has been considerably reduced the past year, and the future prospects are better at the present time than for the last three years, and with careful management will in a year or two be clear of debt.

WARREN COUNTY.

As was its predecessor (1877), so has the year 1878 been one of increased prosperity to the Warren County Agricultural Society. The twenty-eighth annual fair of the society was held on its own beautiful ground, one-half mile north of Lebanon, on September 17, 18, 19, and 20, inclusive, 1878.

It was no little experiment to hold our fair four days, but the result proved that it was a successful one. The weather during the first three days of the fair was perfectly delightful. On the afternoon of the fourth day, it began to rain, and many of the citizens of the county-seat were prevented from attending. However, the crowd was immense, and, notwithstanding the inclemency of the weather, the people all seemed to go away fully satisfied that the twenty-eighth annual fair was the best one ever held in our county. More people visited our fair this fall from adjoining counties than ever before. Our fairs have become very popular abroad as well as at home, as the large attendance testifies. We pride ourselves on the success of our fairs, and we believe they are accomplishing the object for which such societies are formed, improvements in all departments of the agricultural, mechanical, and manufacturing interests of our people. We aim to make these annual gatherings productive of "peace and good will" to all classes of our citizens, and I am proud to say they are heartily supported by citizens of nearly every profession.

Our officers and managers are men of sound judgment, and bring to the work experience, a public spirit, earnestness, sacrifice, and a love for the object to be attained, which bespeaks success. To be an officer or director in a county organization of this nature is generally a thankless task; but I think the people's "well done good and faithful servants," has, in a great measure, rewarded our faithful officers and directors.

As to the progress of the county in improved agricultural implements, we have to confess that it is not so rapid or so considerable as should be expected, considering the general intelligence of the people; yet there is in all parts of the county evidence of improved cultivation of crops, and better husbandry in all departments.

There is a gratifying increase in the interest taken in the raising of live stock of all kinds. Horses and cattle of the choicest blood and most careful breeding are to be found in this county.

Our farmers are using none but the best agricultural implements, and thereby labor to the best advantage. While the farmers show their prosperity by their handsome brick and frame dwellings, with neat yards filled with shrubbery, and their large and commodious barns filled with grain, they have not neglected the education of their children, judging by the neat brick and frame school-houses which have taken the places of the log hut, with its inconveniences. Still I feel sure that even our own people do not too well know that their county is one possessed of the best and largest family of resources out of which to construct a wealthy, vigorous, and prosperous society.

Many of the results above named have been secured through the influence of this society. It should be encouraged by every individual who desires to see the resources of the county fully developed. Our membership now numbers 2,450, and our prospects for the future look bright. We have no fear but what we can maintain the advanced grounds we have held for some years past.

Every department was filled to repletion, and we never had in our county as fine a display. As a consequence of this favorable condition of things, upward of ten thousand people gathered on the grounds to see the sights, view the productions of the county, examine the big pumpkins, squashes, and beets, also the fine needle and patch work, look at the works of art, praise the handsome stock, interchange views, exchange greetings, shake hands, gossip a little over current news, renew old acquaintances, and have a good time generally.

The center of attraction was Floral Hall, which was handsomely ornamented, and was filled with the choicest productions of agriculture in the way of vegetables, grains, and fruits, also profusely decorated with house-plants and flowers. In the way of house-plants, there were some fine exhibits, and around the beautiful fountain, the green-house plants made a very fine display. The exhibition of domestic manufactures was especially good, also fine needle-work and ornamental work of various kinds.

Organs and sewing-machines were to be seen in good variety, and a great quantity of all sorts of domestic articles were on exhibition. There were but few *new* varieties of wheat, corn, or oats planted in this county, as far as I have any knowledge, the usual varieties being the same as in former years.

The society is becoming more popular, and is in better standing in the county, for the reason that all premiums offered were promptly paid. The total debt of the society, at date for purchase of grounds and other improvements, is $3,850. The report of the auditing committee will give the required information as to the society's financial prosperity, which was duly published in the papers of general circulation in the county.

The friends of agriculture have reason to take new heart and courage. Their common cause is in an advancing condition. The tillers of the soil are not only materially, but socially and intellectually, finding their appropriate plane, and the skies are to them brightening.

The officers of the society were each and all promptly on hand, active, energetic, courteous, and dutiful. We heard no word of complaint against them from any source. None could have worked harder to make the fair successful, and they were greatly gratified with the result. The record may properly indorse the annual fair of the Warren County Agricultural Society for 1878 as a great success.

WASHINGTON COUNTY.

The twenty-seventh annual fair was held at Marietta, on the grounds of the association, on the 4th, 5th, and 6th days of September, 1878, and we regret to say that it was, financially, a failure, the receipts being only sufficient to pay the expenses and interest upon our indebtedness, leaving us without the means to pay the premiums awarded. The association has always heretofore paid its premiums in full, except in 1876, when only fifty per cent. was paid. The board do not deem it advisable, under the circumstances, to increase the present indebtedness by borrowing money to pay the premiums in whole or in part, and feel obliged to take advantage of the 31st rule, which provides, in substance, for the payment of premiums out of such funds as may be left after payment of expenses. Our failure is due, we think, wholly to the fact that the soldiers' and sailors' reunion was held here at the same time, and afforded greater and cheaper attractions. There have been also held during the past year in this county, at least three other fairs; and it may be that these, or, at least, some of them, contributed to our failure. That there should be one fair held in each county, open to the county, to several counties, or to the world, we think admits of no question; but we doubt very much the expediency of holding more than one such fair in a county in any one year, or the having of more than one organization in a county, as a county society. There can be, and is, we apprehend, no objections to townships and other local organizations holding fairs, provided such organizations and their fairs are made to be auxiliary to the county organization, just as the county societies should be auxiliary to the State society. The board, in fixing the time for holding the fair at the same time with the reunion, did so after consultation with the reunion committee, and with the understanding that we should have the benefit of the large numbers drawn here by the reunion during a portion, at least, of two days; but, unfortunately for us, this programme was only partially carried out, and hence our failure; if it had been fully carried out, we are satisfied that the result would have been quite different. We do not wish to be understood as imputing bad faith upon the part of the managers of the reunion; and it is but justice to them to say that they did the best they could for us under the circumstances. The mistake was in holding the two at the same time, and that we discovered when it was too late.

The attendance the first day was very small, but as large as we expected, and on the third day the receipts did not pay the expenses, and herein we were greatly disappointed in the calculations we had made, which were based upon the understanding that there would be a sham battle in the vicinity of our grounds on the afternoon of that day, which the committee could not carry out for lack of ground, and the result was that the sham battle was taken some distance from us, and it being the greater attraction and free—a consideration, in these times, of great weight with the masses—there were none left to patronize us. The programme, as to the second day, was carried out, and we had a large attendance.

Although the fair, financially, was a failure, in other respects it was not; for while the display in some of the departments was not as full and good as usual, yet in others it was larger and better. There was a large and very fine display of cattle, sheep, and hogs—probably the best ever made. The show of horses was, in number, but not in quality, up to the average. There was a fair display of fruits, grain, and vegetables. The display of vehicles was unusually large and fine, probably the largest and best ever made. The display in the ladies' department was not as large as usual, which was owing to the fact that the ladies were too busily engaged on the reunion and getting ready for it, to make preparations for the fair.

The State Board requires not only a statement of the principal crops raised, but also an estimate of the amount of each raised and the average yield per acre for 1878. The amount raised and the average per acre can only be approximated, and the estimates given are based upon the assessor's returns for 1877, as there are no other data that will afford the desired information.

The following are the principal crops, to wit: Wheat, oats, hay, corn, and potatoes. The number of acres sown with wheat was probably about 28,432, which is an increase of 20 per cent. on the acreage over last year, the amount raised about 291,149 bushels, being an increase of 10 per cent.; the number of acres sown and the yield were probably the largest ever in this county. The average yield per acre about 10¼ bushels, being less than last year, which was a little over 11 1-6 bushels per acre.

The number of acres sown with oats, and the yield, were probably about the same as last year, to wit: 9,085 acres and 194,530 bushels, making an average of over 21 2-5 bushels per acre.

There was about the same number of acres planted with corn as last year, which was 28,156 acres, but the yield was about 20 per cent less, in consequence of the drouth, which seriously injured the corn on the hill land, and the heavy floods in September, which greatly damaged the corn on the bottoms. The yield was probably about 633,336 bushels, being an average of 22½ bushels per acre. The fodder was unusually short. The hay crop was about 25 per cent. less than last year, which was unusually large, but of much better quality, the hay of last year being considerably damaged by the rains. The acreage the same as last year, to wit, 27,582 acres, the yield about 24,398 tons, being less than a ton per acre. There was a good crop of early potatoes, but the late potatoes were very seriously affected by the drouth, and the yield was about 50 per cent. less than the previous year; the average was probably about the same as last year, to wit, 2,635 acres, the total yield about 77,894 bushels. being a little over 29½ bushels to the acre. Rye is not very extensively cultivated in this county, the amount raised in 1877 being, in round numbers, 20,000 bushels. The raising of tobacco is confined principally to the east end of the county; it was somewhat affected by the drouth. The number of acres planted was about the same as last year, to wit, 1,687 acres, yielding probably about 10,000,000 pounds, the average being a little over 500 pounds to the acre. The apple crop was large; the peach better than usual; the smaller fruits were very abundant. There is not much attention paid to dairy producte in this county, except it may be in a few localities; the number of pounds of butter made about 700,000, and of cheese about 150,000 pounds. Considerable attention has been paid of late years to cattle and sheep, and this class of stock has been greatly improved. Shorthorns and Devons are generally preferred by our farmers; the Jerseys, however, are regarded very highly by some for their milk qualities. There are some very excellent lots of Fine-wool sheep, and in the west end of the county there is a sheep club, and in that section a great interest has been taken in this class of stock. The amount of wool shorn is about 200,000 pounds.

The following are the striking characteristics of the season, kindly furnished me by W. W. Rathbone, Esq.: The winter of 1877-78 was remarkable for high temperature. During March and April it was unusually warm, the temperature of the month of March being six degrees above the temperature of that month for ten years past. The entire spring, notwithstanding its mildness, was notable for its absence of heavy rains. May was noted for its low temperature and consequent frosts. June, also, was cool, the temperature being two degrees below that of the same month for ten years past. July was an unusually hot month, so hot, in fact, as to prove most destructive to the potato crop. During June the weather was very favorable for the rapid growth of the potato plant, but a sudden change from the prevalent cold of June to the intense heat of July caused a blight or burning of the tops of the potato witout a precedent. The summer was remarkable for drought, not broken until September 12, when four inches of rain fell, causing heavy floods, which did great damage to the crops on the bottoms. In 1877 our county produced such a grand crop of wheat that its equal was not to be looked for again soon, but the open winter of 1877-78, followed by the warm and early spring and the cool and dry May and June, gave us a still larger crop in 1878, in the aggregate. Peaches were killed in the bud in the valleys January 7 and 8, when the mercury marked 7° below zero; but on the high lands enough buds escaped to produce, in the aggregate, a large crop for this county. But it is proper to state here that this fruit is not generally or extensively cultivated in the county. Large quantities were shipped, at good prices.

No very great damage, so far as we have learned, has been done to the crops by destructive insects. The potato bug is still with us, but did little damage, comparatively speaking, last year. A small worm, known here as the wire-worm, worked on the corn while it was small, and another worm, new to this section, worked on the silk and young ear, but, so far as we can learn, neither did much damage.

We regret to report that the society is not in a prosperous condition. Various causes have contributed to produce this result, and suffice it to say that chief among them are the hard times, a lack of interest upon the part of the citizens, arising also from various causes, which we will not enumerate; and the holding of the Reunion here for two successive years, which latter materially, and to a greater extent than all other causes, injured our fairs held in those years. An effort is being made to relieve us of our indebtedness, which, if successful, will put us on a sure foundation, and enable us to make some very necessary and desirable improvements on the grounds. It is hoped that a new interest will be awakened on behalf of the society, and that the citizens of this county, more fully and generally appreciating the necessity of and the benefits to be derived from such an organization, will manifest that appreciation in a way that will not only give encouragement and support to the management, but substantial and material aid to the society.

WILLIAMS COUNTY.

The principal crops raised in this county are corn, oats, and wheat. From best information I can gather, the number of acres of corn harvested this year was about 30,000, with an average of 35 bushels per acre. Wheat, about 27,000 acres harvested, averaging 22 bushels per acre. Oats, about 15,000 acres harvested, averaging 35 bushels per acre. Our spring was backward, and corn did no good until last of June and first of July. Considerable rain fell during harvest, but crops were unusually well taken care of. The fall has been favorable in every respect. Crops have been much better this year than for many previous years. Farmers, generally, feel encouraged. No one crop failed with us the present season.

The condition of the society is not as good as its friends could wish for, though nothing serious has laid hold upon it. At present the people are awakened to their interest, and avow their intention of making progress.

The entries at the fair (1878) were not as many as in past years, but the general expression was that never was the display, either in horses, cattle, hogs, grain, and vegetables of a better quality. The hog display was magnificent.

WOOD COUNTY.

The twenty-sixth annual fair of the Wood County Agricultural Society was held at Tontogany, Ohio, on September 3, 4, 5, and 6, 1878.

There were during the year four meetings of the Board. Our fair this year labored under very great disadvantages, growing out of the organization of the Tri-State Fair, at Toledo, Ohio.

The first day of the fair was devoted entirely to making entries and arranging the articles in their respective departments.

Second day, entry books closed at twelve o'clock, noon, except in class three, on trotting. At one P.M. committees were called and instructed, and assigned to their respective duties. These committees were specially instructed to place no premium-cards on articles or stock to which they award premiums, but hand them to the superintendent, who would compare them with the book, and if any mistake had been made to have it corrected at once, when the superintendent placed the premium-card on the article drawing the premium. This rule was found to work well.

The third day of the fair there was trotting and pacing races on the track, and committees making awards.

Fourth, and closing day, committees all made their reports, and in the afternoon trotting and running races, with the grand cavalcade of premium stock on the track, attracted the attention of almost the entire crowd.

Everything passed off pleasantly; the weather was fine, and every one seemed to feel that, all things considered, the fair was all and more than we could have expected, with the tremendous opposition that we had to contend with against the Tri-State Fair.

The principal agricultural products of our county are, corn, wheat, oats, rye, barley, potatoes, clover-seed, timothy-seed, and flax-seed. Of the various kinds of grains raised corn is the greater staple crop of this county. It is in yield up to its standard average, 35 bushels shelled corn per acre.

Oats, Quality good, but yield light. Clover-seed crop, average yield. Potato crop very light. In grasses the crop was very good. Wheat was the best in many years, ranging from 15 to 50 bushels per acre.

In fruits, the small varieties were very good throughout the county. The apple crop was an average yield.

With the present board of officers I can confidently say that there will be no such thing as a failure in our fairs to come, provided the people of the county will do their part.

COUNTY FAIRS IN OHIO FOR 1878.

Counties.	President.	Post-office.	Vice-President.	Post-office.	Treasurer.	Post-office.
Allen	J. B. Roberts	Lima	G. Hefner	Westminster	J. L. Dunlavy	Lima.
Ashtabula	G. E. Nettleton	Ashtabula	E. O. Peck	Richmond	J. Gill	Jefferson.
Athens	Isaac Stanley	Athens	G. M. McDougal	Athens	A. J. Frame	Athens
Auglaize	Jos. Gearing	Moulton	A. F. Shaffer	Wapakonetta	T. Dickman	Wapakonetta.
Belmont	J. F. Charlesworth	St. Clairsville	Wm. King	East Richland	A. H. Mitchell	St. Clairsville.
Brown	J. P. Richards	Georgetown	J. E. Brose	Georgetown	E. F. Blair	Georgetown.
Butler	James Giffin	Hamilton	Peter Murphy	Hughes' Station	Wm. Pfau	Hamilton.
Carroll	D. B. Lee	Carrollton	J. Gaus	Carrollton	C. G. Faucet	Carrollton.
Clarke	J. S. R. Hazzard	Springfield	Smith Wallace	Donaldsonville	D. P. Jeffries	Springfield.
Clermont	J. J. Rapp	Monterey	S. J. Rybolt	Mulberry	J. W. Duckwall	Batavia.
Clinton	C. Linton	Wilmington	C. W. Babb	Wilmington	M. J. Grudy	Wilmington.
Columbiana	John Robinson	West Beaver	John C. Smith	Wellsville	Sam'l Bowman	New Lisbon.
Coshocton	J. S. Elliott	Coshocton	Lewis Demoss	Coshocton	Jos. L. Rue	Coshocton.
Crawford	E. R. Kearsley	Bucyrus	D. C. Boyer	Bucyrus	J. B. Gormly	Bucyrus.
Cuyahoga	S. W. Knapp	Gates' Mills	J. W. Collins	Bainbridge	E. A. Kelley	Chagrin Falls.
Darke	Thos. McCowen	Arcanum	John Townsend	Greenville	Geo. W. Studabaker	Greenville.
Defiance	Isaac Corwin	Defiance	J. J. Myers	Defiance	Geo. W. Buhel	Defiance.
Delaware	Wm. H. Cutler	Delaware	E. Cole	Ashley	Chas. D. Potter	Delaware.
Erie	D. H. Beneshoter	Berlin Heights	J. F. Green	Sandusky	Geo. J. Anderson	Sandusky.
Fairfield	Isaac Claypoel	Lancaster	R. L. Sharp	Sugar Grove	S. J. Wolfe	Lancaster.
Franklin	J. O'B. Renick	Columbus			Nelson Sims	Columbus.
Gallia	Chas. D. Bailey	Gallipolis	John E. Mills	Gallipolis	John J. Pool	Gallipolis.
Greene	John B. Lucas	Xenia	Robt. Stevenson	Xenia	David Millen	Xenia.
Guernsey	J. T. McPherson	Cambridge	A. J. Clark	Cambridge	W. A. Campbell	Cambridge.
Hancock	Sam'l Myers	Findlay	G. W. Powell	Findlay	Henry Greer	Mt. Blanchard.
Hardin	Jas. M. White	Kenton	Wm. A. Kelly	Kenton	Robt. L. Miller	Kenton.
Harrison	John J. McFadden	New Athens	O. Slemmons	Cadiz	W. C. Laizure	Cadiz.
Hocking	Sam'l E. Bay	Logan	John Hansel	Logan	G. W. Brehm	Logan.
Holmes	Robt. F. Gray	Millersburgh	E. Mast	Millersburg	A. B. Rudy	Millersburg.
Jackson	J. A. Sell	Jackson	G Thompson	Jackson	D. D. Dungan	Jackson.
Jefferson	Chas. Burriss	Smithfield	John V. Smith	Smithfield	Geo. Starr	Smithfield.
Knox	John C. Levering	Leverings	Alexander Cassil	Mt. Vernon	Sam'l Bishop	Mt. Vernon.
Lake	E. T. C. Aldrich	Mentor	J. L. Wood	Madison	S. T. Ladd	Painesville.
Lawrence	Wm. D. Kelley	Ironton	Jerry Cooper	Waterloo	James M. Kelley	Ironton.
Licking	Wm. Parr	Linnville	Geo. W. Ingraham	Newark	I. W. Bigelow	Newark.

COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	President.	Post-office.	Vice-President.	Post-office.	Treasurer.	Post-office.
Logan	Wm. R. Pool	Bellefontaine	L. B. Newman	DeGraff	F. R. McLaughlin	Bellefontaine.
Mahoning	Ward Dean	Ellsworth	J. H. Shields	Canfield	H. A. Manchester	Canfield.
Marion	Geo. Retterer	Marion	John A. Faas	Caledonia	J. Q. Cadeling	Marion.
Medina	Geo. M. Ganyard	Granger	A. L. Clapp	Chatham Center.	S. B. Woodward	Medina.
Mercer	Abner Davis	Celina				
Miami	M. W. Hayes	Troy	B. P. Bond	Tadmor	Theo. Sullivan	Troy.
Monroe	I. P. Farquhar	Woodsfield	Jesse A. Keysor	Beallsville	W. T. Morris	Woodsfield.
Morgan	E. S. Fawcett	Chester Hill	A. J. Lawrence	McConnelsville	T. T. Nott	McConnellsvile.
Morrow	Minor Harrod	Mt. Gilead	M. B. Brooke	Cardington	W. W. McCracken	Mt. Gilead.
Muskingum	John M. Lane	Zanesville	J. B. Tannehill	West Zanesville	Chas. Gorsuch	West Zanesville.
Ottawa	Henry Bredbeck	Danbury	Ervin Johnson	Gypsum	Geo. Bliss	Port Clinton.
Paulding	W. Baldwin	Paulding	C. Smith	Cecil	Frederick Young	Paulding.
Perry	Sam'l Arnold	New Lexington	T. P. Skinner	Sego	J. V. Ward	New Lexington.
Pickaway	F. M. Black	Darbyville	M. V. B. Lindsey	Circleville	S. L. Grigsby	Circleville.
Putnam	S. Sutton	Ottawa	C. Mack	Leipsic	S. S. Laskey	Ottawa.
Richland	Robt. Darling	Perrysville	Marion Carter	Mansfield	M. D. Ward	Mansfield.
Ross	Jos. W. Clark	Chillicothe	David Shotts	Chillicothe	Theo. Spetnagel	Chillicothe.
Sandusky	La. Q. Rawson	Fremont	C. H. Bell	Fremont	W. W. Stine	Fremont.
Seneca	N. L. Brewer	Tiffin	Frank Baker	Palo Alto	O. C Zellers	Tiffin.
Shelby	S. Alex. Leckey	Sidney	Ed. E. Nutt	Sidney	Chas. C. Weaver	Sidney.
Stark	J. K. Neiss	Canton	Jacob Rupert	Canton	Geo. D. Harter	Canton.
Summit	John F. Moore	Akron	K. J Ellett	Middlebury	H. A. Pick	Talmadge.
Trumbull	S. N. Andrews	Warren	M. S. Clapp	Warren	P. L. Webb	Warren.
Tuscarawas	E. C. Lewis	Canal Dover	Amos Woodling	Barrs' Mills	Philip Baker	Canal Dover.
Union	D Buxton	Marysville	Nathan Howard	Milford Center	P. Snider	Marysville.
Warren	Sam'l Irons	Lebanon	A. Edwards	Harveysburg	J. M. Ogles	Lebanon.
Washington	P. Palmer	Whipple	Wm. Thompson	Layman	Wm. H. Johnson	Marietta.
Wood	E. B. Beverstock	Tontogany	H. C. Strow	Milton Center	S. W. Whitmore	Tontogany.

COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Secretary.	Post-office.	Time of fair.	Place of fair.
Allen	S. Sanford	Lima	October 1, 2, 3, 4	Lima.
Ashtabula	E. J. Pinney	Jefferson	September 24, 25, 26, 27	Jefferson.
Athens	J. B. Allen	Athens	October 3, 4	Athens.
Auglaize	S. W. McFarland	Wapakonetta	September 25, 26, 27	Wapakonetta.
Belmont	J. C. Pratt	St. Clairsville	September 18, 19, 20	St. Clairsville.
Brown	W. H. Wilson	Georgetown	September 10, 11, 12, 13	Georgetown.
Butler	W. R. Cochran	Hamilton	October (first week)	Hamilton.
Carroll	G. H. Allen	Carrollton	October 9, 10, 11	Carrollton.
Clarke	L. B. Sprague	Springfield	August 20, 21, 22, 23	Springfield.
Clermont	R. A. South	Monterey	September 3, 4, 5, 6	Boston.
Clinton	S. G. Smith	Wilmington	September 2, 3, 4, 5	Wilmington.
Columbiana	Richard Arter	New Lisbon	September 24, 25, 26	New Lisbon.
Coshocton	Geo. Miller	Coshocton	September 24, 25, 26, 27	Coshocton.
Crawford	E. G. Chambers	Bucyrus	September 24, 25, 26, 27	Bucyrus.
Cuyahoga	E. R. Wilmot	Chagrin Falls	October 1, 2, 3, 4	Chagrin Falls.
Darke	John C. Turpen	Greenville	September 17, 18, 19, 20	Greenville.
Defiance	Elmer White	Defiance	October 1, 2, 3, 4	Defiance.
Delaware	Chas. M. James	Delaware	September 25, 26, 27	Delaware.
Erie	Theo. F. Spencer	Sandusky	September 24, 25, 26, 27	Sandusky.
Fairfield	Wm. Davidson	Lancaster	October 9, 10, 11, 12	Lancaster.
Franklin	Geo. Donaldson	Columbus		
Fulton	David Ayres	Tedrow	September 24, 25, 26, 27	Wauseon.
Gallia	John C. Vanden	Gallipolis	September 11, 12, 13	Gallipolis.
Greene	H. McQuiston	Xenia	August 14, 15, 16	Xenia.
Guernsey	C. P. B. Sarchet	Cambridge		Cambridge.
Hancock	D. B. Beardsley	Findlay	October 2, 3, 4, 5	Findlay.
Hardin	W. S. Robinson	Kenton	September 25, 26, 27, 28	Kenton.
Harrison	W. O. Potts	Cadiz	September 3, 4, 5, 6	Cadiz.
Hocking	J. E. Brown	Logan	October 2, 3, 4, 5	Logan.
Holmes	Geo. W. Sharp	Millersburg	September 25, 26, 27	Millersburg.
Jackson	F. M. Jacobs	Jackson		
Jefferson	R. F. Henderson	Smithfield	September 25, 26, 27	Smithfield.
Knox	Willard S. Hyde	Mt. Vernon	September 24, 25, 26, 27	Mt. Vernon.
Lake	C. R. Stone	Painesville	September 4, 5, 6	Painesville.
Lawrence	T. I. Murdoch	Ironton	September 17, 18, 19, 20	Ironton.

COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Secretary.	Post-office.	Time of fair.	Place of fair.
Licking	E. F, Lingafelter	Newark	October 1, 2, 3, 4	Newark,
Logan	Geo. H. Allen	Bellefontaine	October 1, 2, 3, 4	Bellefontaine,
Mahoning	Jared Huxley	Youngstown	October 1, 2, 3	Canfield.
Marion	J. E. Crow	Marion	October 1, 2, 3, 4	Marion.
Medina	F. R. Loomis	Medina	September 17, 18, 19	Medina.
Mercer	D. J. Roop	Celina	September 10, 11, 12, 13	Celina.
Miami	W. A. R. Tenney	Troy	October 8, 9, 10, 11	Troy.
Monroe	Geo. P. Door	Woodsfield	September 17, 18, 19	Woodsfield.
Morgan	Thos. Hammond	McConnelsville	September 17, 18, 19	McConnelsville.
Morrow	S. Rosenthal	Mt. Gilead	October 9, 10, 11	Mt. Gilead.
Muskingum	T. F. Spangler	Zanesville	September 3, 4, 5, 6	Zanesville,
Ottawa	L. Marshall	Port Clinton	September 16, 17, 18	Port Clinton,
Paulding	A. Durfey	Paulding	October 1, 2, 3, 4	Paulding.
Perry	J. F. Comly	New Lexington	September 25, 26, 27	New Lexington.
Pickaway	M. A. Sweetman	Circleville	October 1, 2, 3, 4	Circleville,
Preble	W, C. Barnhiser	Eaton	September 24, 25, 26, 27	Eaton.
Putnam	S. S. Bacon	Ottawa	October 9, 10, 11, 12	Ottawa.
Richland	Frank Ward	Mansfield	September 25, 26, 27	Mansfield.
Ross	H. W. Woodrow	Chillicothe	September 3, 4, 5, 6	Chillicothe,
Sandusky	John Langgraff, Jr.	Fremont	October 1, 2, 3, 4	Fremont,
Seneca	J. H. Pittinger	Tiffin	October 1, 2, 3, 4	Tiffin.
Shelby	Jas. S. Read	Sidney	October 1, 2, 3, 4	Sidney.
Stark	A. D. Miller	Canton	October 1, 2, 3, 4	Canton.
Summit	S. H. Pitkin	Akron	October 2, 3, 4, 5	Akron.
Trumbull	H. F. Austin	Leavittsburg	September 17, 18, 19, 20	Warren.
Tuscarawas	E. S. Slingluff	Canal Dover	October 1, 2, 3, 4	Canal Dover.
Union	R. L. Woodburn	Marysville	October 1, 2, 3, 4	Marysville.
Van Wert	Henry Robinson	Van Wert	September 17, 18, 19, 20	Van Wert.
Warren	Geo. W. Carey	Lebanon	September 17, 18, 19, 20	Lebanon.
Washington	C. T. Frazyer	Marietta	September 4, 5, 6	Marietta.
Wood	J. Q. Avery	Weston	September 3, 4, 5, 6	Tontogany.

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878.

Counties.	Shorthorns.			Devons.			Any other breeds.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams	......	......	......	......	......	......	......	......	......
Allen	70	$101 00	$101 00	......	......	......	25	$72 00	$34 00
Ashland	......	......	......	......	......	......	......	......	......
Ashtabula	70	136 00	128 00	......	$31 00	......	28	152 00	55 00
Athens	33	172 00	159 00	33	172 00	$159 00	29	53 00	55 00
Auglaize	......	......	......	10	52 00	26 00	22	68 00	39 00
Belmont	......	......	......	5	175 00	25 00	40	354 00	114 00
Brown	16	46 00	46 00	......	......	......	37	70 00	75 00
Butler	21	107 00	102 00	12	108 00	49 00	30	95 00	60 00
Carroll	25	70 00	70 00	......	......	......	......	......	......
Champaign	17	85 00	76 00	......	9 00	......	4	9 00	9 00
Clarke	48	224 00	218 00	33	106 00	104 00	9	120 00	46 00
Clermont	......	......	......	......	......	......	63	121 00	121 00
Clinton	7	148 00	86 00	......	......	......	......	......	......
Columbiana	37	64 00	58 00	2	51 00	4 00	22	120 00	71 00
Coshocton	33	140 00	124 00	......	15 00	......	18	56 00	53 00
Crawford	23	......	......	......	......	......	11	300 00	294 00
Cuyahoga	18	40 00	30 00	5	40 00	13 00	53	74 00	71 00
Darke	37	207 00	169 00	16	66 00	62 00	......	......	......
Defiance	20	......	......	14	......	......	26	......	......
Delaware	52	60 00	57 00	......	......	......	31	122 00	87 00
Erie	22	104 00	76 00	......	85 00	......	43	236 00	89 00
Fairfield	75	377 00	345 00	2	30 00	10 00	4	60 00	35 00
Fayette	......	......	......	......	......	......	......	......	......
Franklin	......	......	......	......	......	......	......	......	......
Fulton	27	74 00	65 00	......	......	......	37	70 00	61 00
Gallia	......	......	......	......	......	......	......	......	......
Geauga	72	90 00	85 00	46	82 00	40 00	192	191 00	113 00
Greene	1	98 00	......	7	75 00	26 00	25	315 00	189 00
Guernsey	......	......	......	......	......	......	......	......	......
Hamilton	17	119 00	62 00	2	60 00	12 00	28	60 00	38 00
Hancock	......	......	......	......	......	......	......	......	......

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Shorthorns.			Devons.			Any other breeds.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Hardin	15	$72 00	$65 00	......	......	......	9	$94 00	$27 00
Harrison	18	85 00	69 00	8	$64 00	$33 00	......	......	......
Henry	......	......	......	......	......	......	......	......	......
Highland	15	187 00	186 00	......	......	......	9	99 00	41 00
Hocking	28	137 00	107 00	2	64 00	10 00	19	64 00	34 00
Holmes	28	125 00	104 00	......	......	......	......	......	......
Huron	40	140 00	136 00	......	38 00	......	34	119 00	56 00
Jackson	......	......	......	......	......	......	21	53 00	47 00
Jefferson	36	82 00	80 00	......	......	......	40	86 00	59 00
Knox	42	163 00	163 00	1	45 00	2 00	26	75 00	35 00
Lake	69	114 00	95 00	......	......	......	19	50 00	44 00
Lawrence	19	84 00	57 00	16	84 00	29 00	15	43 00	36 00
Licking	22	140 00	120 00	19	122 00	29 00	......	......	......
Logan	25	49 00	49 00	5	44 00	44 00	22	114 00	114 00
Lorain	24	46 00	45 00	9	45 00	27 00	62	139 00	111 00
Lucas	......	......	......	......	......	......	......	......	......
Madison	......	......	......	......	......	......	......	......	......
Mahoning	46	198 00	156 00	13	60 00	26 00	38	71 00	61 00
Marion	......	......	......	......	......	......	130	571 00	326 00
Medina	55	92 00	39 00	....	......	......	60	75 00	60 00
Meigs	18	89 00	60 00	6	89 00	10 00	50	130 00	100 00
Mercer	32	66 00	51 00	......	......	......	2	18 00	5 00
Miami	29	84 00	78 00	10	49 00	30 00	36	178 00	85 00
Monroe	3	64 00	20 00	3	64 00	18 00	......	......	......
Montgomery	......	......	......	......	......	......	......	......	......
Morgan	36	46 00	37 00	......	......	......	12	34 00	16 00
Morrow	43	155 00	155 00	......	......	......	35	64 00	55 00
Muskingum	38	94 00	88 00	21	94 00	80 00	9	75 00	51 00
Noble	......	......	......	8	74 00	19 00	3	26 00	6 00
Ottawa	8	24 00	14 00	......	......	......	13	15 00	11 00
Paulding	......	......	......	23	31 00	31 00	......	......	......
Perry	19	64 00	60 00	9	64 00	36 00	36	123 00	93 00

Pickaway	36	190 00	190 00				6	66 00	31 00
Pike									
Portage	12	65 00	65 00		110 00				79 00
Preble	24						32		
Putnam							55	154 00	85 00
Richland	26	72 00	72 00	6	40 00	40 00	24	75 00	75 00
Ross	15	303 00	274 00				12	20 00	6 00
Sandusky	17	70 00	45 00		23 00		28	63 00	53 00
Scioto									
Seneca	28	90 00		1	85 00		33	285 00	
Shelby	34	87 00	47 00	6	45 00	21 00	6	36 00	15 00
Stark	20	204 00	185 00	27	139 00	110 00	25	237 00	78 00
Summit	42		88 00				30		89 00
Trumbull	101	278 00	276 00				39	71 00	48 00
Tuscarawas	24	101 00					35	79 00	
Union	32	151 00	135 00						
Van Wert							13	109 00	40 00
Vinton									
Warren		77 00	77 00					97 00	75 00
Washington	21	110 00	86 00	13	84 00	49 00	54	197 00	126 00
Wayne									
Williams	18	49 00	36 00				39	314 00	45 00
Wood	14	82 00	50 00		29 00		9	32 00	24 00
Wyandot	15	119 00	102 00				2	119 00	16 00
Totals	1,928	$6,910 00	$5,819 00	393	$2,743 00	$1,174 00	1,919	$6,988 00	$4,067 00

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Fat cattle and work-oxen.			Thoroughbred horses.			Roadsters.		
	No. of entries.	Amount offered.	Amount awarded.	No of entries	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams									
Allen	1	$12 00	$4 00	14	$80 00	$49 00	13	$51 00	$14 00
Ashland									
Ashtabula	27	67 00	38 00				65	102 00	85 00
Athens	26	49 00	45 00	10	153 00	101 00	69	95 00	96 00
Auglaize	1	10 00	10 00				22	29 00	29 00
Belmont	16	92 00	68 00	1	106 00	10 00	47	128 00	100 00
Brown	1	27 00	3 00	108	117 00	136 00	69	142 00	162 00
Butler	27	55 00	55 00				193	197 00	197 00
Carroll	22	53 00	50 00						
Champaign	10	50 00	19 00	6	25 00	17 00	28	207 00	73 00
Clarke	13	102 00	54 00	4	117 00	40 00	67	151 00	150 00
Clermont							36	36 00	36 00
Clinton				11	67 00	36 00	32	96 00	91 00
Columbiana							103	104 00	
Coshocton	3	35 00	10 00	9	94 00	63 00	12	102 00	65 00
Crawford	8			8			17		
Cuyahoga	20	60 00	14 00				40	45 00	35 00
Darke	3	37 00	37 00	6	74 00	69 00	19	31 00	31 00
Defiance	16						47		
Delaware	18	67 00	57 00				66	133 00	104 00
Erie	11	71 00	25 00				47	51 00	43 00
Fairfield	32	159 00	107 00	13	153 00	106 00	84	432 00	408 00
Fayette									
Franklin									
Fulton	8	20 00	18 00				16	105 00	88 00
Gallia									
Geauga	35	98 00	93 00	6	30 00	10 00	60	62 00	45 00
Greene				12	80 00	43 00	44	74 00	74 00
Guernsey									
Hamilton				3	76 00		149	247 00	278 00
Hancock									

Hardin				11	96 00	47 00	18	41 00	41 00
Harrison							56	116 00	85 00
Henry									
Highland				18	52 00	52 00	23	99 00	84 00
Hocking	4	32 00	11 00	11	98 00	52 00	25	168 00	99 00
Holmes				1	90 00		15	65 00	55 00
Huron	9	78 00	39 00		15 00		61	131 00	102 00
Jackson									
Jefferson	8	23 00	21 00	1		10 00	66	116 00	99 00
Knox	3	18 00	18 00	19	117 00	117 00	40	83 00	83 00
Lake	10	55 00	18 00				19	49 00	38 00
Lawrence					95 00				
Licking	16	63 00	59 00	28	140 00	73 00	75	186 00	186 00
Logan	15	83 00	83 00				85	212 00	212 00
Lorain	4	18 00	12 00				71	69 00	57 00
Lucas									
Madison									
Mahoning	27	128 00	59 00				117	240 00	180 00
Marion									
Medina	24	75 00	67 00				42	75 00	75 00
Meigs	18	46 00	38 00	7	65 00	46 00	10	75 00	60 00
Mercer	2	15 00	5 00				1	42 00	5 00
Miami				1	31 00	8 00	56	127 00	105 00
Monroe	4	30 00	12 00						
Montgomery									
Morgan	10	51 00	47 00	9	93 00	27 00	61	91 00	85 00
Morrow	13	61 00	31 00	14	100 00	72 00	42	28 00	24 00
Muskingum	16	79 00	64 00	17	90 00	41 00	42	126 00	110 00
Noble				7	25 00	18 00	19	34 00	25 00
Ottawa	6	30 00							
Paulding	1	6 00	4 00				10	31 00	23 00
Perry				3	74 00	23 00	16	103 00	30 00
Pickaway	4	58 00	30 00				72	195 00	185 00
Pike									
Portage	1	72 00	4 00	5	18 00	28 00	41	77 00	65 00
Preble	12			2			46		
Putnam							10	35 00	24 00
Richland	6	30 00	30 00	17	100 00	100 00	22	80 00	80 00
Ross	3	89 00	18 00	4	86 00	30 00	34	144 00	78 00
Sandusky	15	46 00	29 00	8	31 00	26 00	22	29 00	29 00
Scioto									
Seneca	12	75 00					13	100 00	

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Fat cattle and work-oxen.			Thoroughbred horses.			Roadsters.		
	No. of entries.	Amount offered.	Amount awarded	No. of entries.	Amount offered.	Amount awarded.	No of entries.	Amount offered	Amount awarded.
Shelby	......	......	......	4	$43 00	$13 00	59	$111 00	$90 00
Stark	......	......	......	......	......	......	26	162 00	138 00
Summit	21	......	$56 00	13	......	......	59	......	......
Trumbull	53	$120 00	96 00	......	......	......	146	192 00	182 00
Tuscarawas	6	43 00	......	......	......	......	16	105 00	......
Union	......	......	......	......	......	......	55	65 00	63 00
Van Wert	......	......	......	......	......	......	1	6 00	4 00
Vinton	......	......	......	......	......	......	......	......	......
Warren	......	......	......	......	52 00	32 00	......	57 00	52 00
Washington	6	55 00	19 00	31	115 00	64 00	31	115 00	64 00
Wayne	......	......	......	......	......	......	......	......	......
Williams	5	40 00	3 00	......	......	......	12	25 00	5 00
Wood	2	20 00	7 00	......	......	......	16	70 00	47 00
Wyandot	38	92 00	84 00	5	90 00	16 00	17	99 00	60 00
Totals	672	$2,695 00	$1,667 00	447	$2,888 00	$1,575 00	3,013	$6,594 00	$5,233 00

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	General purpose.			Draft.			Speed horses.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams									
Allen	23	$92 00	$55 00	34	$92 00	$70 00		$105 00	$54 00
Ashland									
Ashtabula	45	29 00	26 00	7	28 00	11 00	10	165 00	110 00
Athens	52	36 00	39 00	52	36 00	39 00	11	460 00	360 00
Auglaize	35	83 00	70 00	19	25 00	25 00	20	119 00	114 00
Belmont	31	120 00	87 00	15	110 00	66 00	35	535 00	507 00
Brown	83	97 00	90 00	45	97 00	88 00	5	75 00	37 00
Butler	186	173 00	173 00	62	84 00	84 00	100	1,000 00	970 00
Carroll	144	174 00	174 00	38	84 00	78 00	25	437 00	437 00
Champaign	93	150 00	120 00	46	150 00	135 00	24	150 00	135 00
Clarke	53	105 00	84 00	32	138 00	104 00	27	545 00	505 00
Clermont	115	87 00	87 00	53	77 00	77 00	12	163 00	163 00
Clinton	43	137 00	121 00	22	139 00	94 00	36	1,330 00	1,090 00
Columbiana	139	31 00		84	122 00		21	190 00	
Coshocton	26	136 00	101 00	25	141 00	105 00	44	524 00	428 00
Crawford	22	704 00	534 00	18			15		
Cuyahoga	97	64 00	43 00	2	8 00	8 00	15	16 00	9 00
Darke	50	121 00	101 00	19	93 00	55 00	17	1,075 00	740 00
Defiance	56			14			35		
Delaware	54	84 00	76 00	31	107 00	82 00	53	336 00	336 00
Erie	65	79 00	58 00	16	47 00	35 00	45	864 00	759 00
Fairfield	48	188 00	184 00	39	198 00	160 00	23	570 00	570 00
Fayette									
Franklin									
Fulton				15	64 00	40 00	13	270 00	80 00
Gallia									
Geauga	46	62 00	24 00	4	10 00	10 00	16	240 00	240 00
Greene	71	100 00	100 00	27	84 00	47 00	44	1,399 00	1,005 00
Guernsey									
Hamilton	90	96 00	121 00	23	73 00	66 00	43	585 00	330 00

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	General purpose.			Draft.			Speed horses.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Hancock	......	......	......	......	......	......	......	......	......
Hardin	45	$107 00	$82 00	33	$107 00	$76 00	28	$465 00	$445 00
Harrison	59	110 00	108 00	34	80 00	66 00	23	290 00	290 00
Henry	......	......	......	......	......	......	......	......	......
Highland	38	127 00	116 00	28	119 00	106 00	51	2,675 00	2,297 00
Hocking	24	116 00	80 00	9	100 00	35 00	20	94 00	79 00
Holmes	24	63 00	63 00	47	117 00	97 00	20	215 00	215 00
Huron	43	111 00	72 00	11	99 00	39 00	39	600 00	422 00
Jackson	52	75 00	51 00	......	......	......	......	......	......
Jefferson	59	94 00	76 00	47	129 00	110 00	35	279 00	279 00
Knox	48	145 00	145 00	33	142 00	142 00	31	535 00	535 00
Lake	94	118 00	96 00	......	......	......	......	......	......
Lawrence	23	43 00	43 00	31	93 00	64 00	30	114 00	98 00
Licking	85	140 00	140 00	37	140 00	140 00	23	493 00	393 00
Logan	117	212 00	212 00	65	212 00	212 00	15	435 00	435 00
Lorain	59	77 00	74 00	20	69 00	57 00	16	80 00	80 00
Lucas	......	......	......	......	......	......	......	......	......
Madison	......	......	......	......	......	......	......	......	......
Mahoning	92	156 00	113 00	62	194 00	143 00	14	59 00	36 00
Marion	224	1,392 00	1,308 00	......	......	......	......	......	......
Medina	63	75 00	73 00	21	75 00	50 00	22	181 00	166 00
Meigs	83	157 00	120 00	5	13 00	13 00	17	333 00	333 00
Mercer	23	80 00	46 00	10	65 00	31 00	14	280 00	150 00
Miami	59	93 00	87 00	30	102 00	94 00	23	315 00	170 00
Monroe	23	49 00	39 00	11	30 00	30 00	28	157 00	157 00
Montgomery	......	......	......	......	......	......	......	......	......
Morgan	81	77 00	77 00	18	31 00	24 00	12	120 00	10 00
Morrow	58	91 00	70 00	51	60 00	60 00	12	95 00	95 00
Muskingum	51	126 00	104 00	23	124 00	94 00	73	727 00	600 00
Noble	34	49 00	48 00	16	40 00	33 00	12	110 00	110 00
Ottawa	20	70 00	26 00	25	62 00	29 00	15	80 00	35 00

Paulding	16	36 00	29 00	6	26 00	26 00	12	215 00	215 00
Perry	20	103 00	70 00	9	103 00	38 00	54	324 00	209 00
Pickaway	34	101 00	90 00	26	127 00	98 00	32	211 00	151 00
Pike									
Portage	15	65 00	25 00				8	45 00	65 00
Preble	23			41			37		
Putnam	25	75 00	54 00	15	59 00	37 00	30	329 00	329 00
Richland	25	98 00	90 00	12	80 00	80 00			
Ross	58	181 00	131 00	25	167 00	90 00	31	1,190 00	900 00
Sandusky	119	184 00	166 00	60	193 00	139 00	30	570 00	570 00
Scioto									
Seneca	36	160 00		11	140 00		21	450 00	
Shelby	67	100 00	97 00	18	62 00	45 00	45	606 00	428 00
Stark	69	224 00	195 00	33	255 00	228 00	12	205 00	172 00
Summit	94			2			20		
Trumbull	42	107 00	62 00	8	30 00	16 00	9	300 00	300 00
Tuscarawas	55	118 00		30			20	400 00	
Union	54	70 00	56 00	46	98 00	95 00	55	450 00	435 00
Van Wert	17	86 00	32 00	16	110 00	35 00	15	260 00	230 00
Vinton									
Warren		177 00	140 00		109 00	80 00		1,100 00	855 00
Washington	41	107 00	88 00	15	107 00	51 00	10	700 00	500 00
Wayne									
Williams	48	86 00	65 00	22	87 00	46 00	8	105 00	105 00
Wood	49	67 00	60 00	12	32 00	32 00	34	340 00	232 00
Wyandot	23	89 00	60 00	20	87 00	48 00	84	593 00	488 00
Totals	4,086	$9,127 00	$7,447 00	1,836	$6,082 00	$4,403 00	1,829	$28,278 00	$22,693 00

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Mules and asses.			Sheep.			Swine.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams									
Allen	1	$17 00		47	$71 00	$62 00	72	$80 00	$68 00
Ashland									
Ashtabula				65	83 00	76 00	15	60 00	21 00
Athens	4	33 00	18 00	33	105 00	105 00	18	43 00	38 00
Auglaize	4	16 00	6 00	8	40 00	12 00	25	50 00	50 00
Belmont	7	29 00	11 00	35	180 00	33 00	28	114 00	36 00
Brown	9	33 00	19 00	85	72 00	72 00	73	73 00	79 00
Butler	15	49 00	30 00	104	121 00	94 00	115	225 00	213 00
Carroll	6	9 00	9 00	67	85 00	85 00	56	58 00	58 00
Champaign	17	30 00	21 00	47	90 00	57 00	71	110 00	92 00
Clarke	3	54 00	13 00	124	160 00	160 00	86	168 00	146 00
Clermont	32	46 00	46 00	65	55 00	55 00	19	75 00	75 00
Clinton	6	28 00	23 00	10	64 00	36 00	35	151 00	151 00
Columbiana	5	34 00	14 00	88	191 00	178 00	62	115 00	105 00
Coshocton	6	27 00	14 00	55	180 00	156 00	54	169 00	123 00
Crawford	11	25 00	18 00	48	96 00	86 00	93	128 00	105 00
Cuyahoga	2	10 00	6 00	51	61 00	39 00	33	30 00	24 00
Darke		10 00		40	69 00	69 00	86	209 00	204 00
Defiance	9			26			68		
Delaware	10	41 00	21 00	57	122 00	116 00	48	120 00	90 00
Erie	1	25 00	5 00	50	196 00	126 00	77	105 00	105 00
Fairfield	5	80 00	35 00	68	303 00	295 00	65	295 00	277 00
Fayette									
Franklin									
Fulton	5	29 00	10 00	25	58 00	43 00	33	76 00	49 00
Gallia									
Geauga	3	14 00	4 00	88	123 00	101 00	17	37 00	29 00
Greene	1	49 00		76	105 00	80 00	110	166 00	161 00
Guernsey									
Hamilton		20 00		58	77 00	69 00	91	134 00	134 00

Hancock									
Hardin	1	18 00	4 00	30	116 00	57 00	32	131 00	72 00
Harrison	3	17 00	12 00	80	200 00	113 00	17	70 00	40 00
Henry									
Highland	3	31 00	16 00	30	100 00	65 00	32	108 00	108 00
Hocking	6	34 00	13 00	29	144 00	72 00	29	160 00	70 00
Holmes	8	26 00	26 00	59	89 00	74 00	22	85 00	40 00
Huron				64	208 00	124 00	50	112 00	98 00
Jackson	2	14 00	2 00	9	17 00	13 00	6	18 00	14 00
Jefferson				53	141 00	131 00	40	72 00	62 00
Knox				85	171 00	160 00	60	64 00	64 00
Lake				50	41 00	44 00	51	70 00	58 00
Lawrence	10	52 00	24 00	19	64 00	33 00	15	80 00	57 00
Licking	4	41 00	41 00	119	233 00	233 00	116	263 00	234 00
Logan	6	58 00	58 00	59	202 00	202 00	39	43 00	43 00
Lorain	4	16 00	12 00	51	111 00	111 00	37	44 00	37 00
Lucas									
Madison									
Mahoning	15	40 00	21 00	133	193 00	187 00	39	139 00	89 00
Marion				64	188 00	125 00	160	218 00	142 00
Medina				96	129 00	105 00	38	75 00	55 00
Meigs	5	42 00	33 00	42	137 00	94 00	24	36 00	34 00
Mercer	1	18 00	3 00	10	36 00	24 00	13	119 00	57 00
Miami	5	10 00	10 00	42	183 00	137 00	32	182 00	99 00
Monroe	6	22 00	19 00	24	130 00	87 00	7	114 00	65 00
Montgomery									
Morgan	15	40 00	36 00	88	125 00	90 00	27	48 00	36 00
Morrow	8	10 00	10 00	81	90 00	76 00	42	97 00	82 00
Muskingum	3	15 00	9 00	54	179 00	144 00	38	120 00	100 00
Noble	5	21 00	8 00	15	24 00	21 00	3	25 00	5 00
Ottawa		12 00		46	50 00	45 00	15	34 00	13 00
Paulding				3	11 00	4 00	20	14 00	14 00
Perry	8	38 00	25 00	47	106 00	96 00	39	104 00	98 00
Pickaway	2	20 00	10 00	21	120 00	75 00	40	80 00	59 00
Pike									
Portage	5	8 00	16 00	23	107 00	49 00	9	48 00	19 00
Preble	14			122			126		
Putnam	8	22 00	12 00	15	28 00	19 00	12	37 00	13 00
Richland				12	40 00	40 00	60	120 00	120 00
Ross	12	38 00	29 00	35	170 00	110 00	22	208 00	100 00
Sandusky	4	30 00	8 00	39	120 00	79 00	28	76 00	60 00
Scioto									

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Mules and asses.			Sheep.			Swine.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Seneca	2	$20 00		66	$80 00		65	$75 00	
Shelby	3	35 00	$8 00	39	61 00	$57 00	36	133 00	$88 00
Stark				55	209 00	190 00	56	376 00	242 00
Summit	2			99			12		
Trumbull				102	131 00	121 00	72	124 00	109 00
Tuscarawas	10	20 00		70	137 00		35	63 00	
Union				186	104 00	97 00	83	195 00	157 00
Van Wert	1	30 00	3 00	16	51 00	26 00	23	92 00	56 00
Vinton									
Warren		19 00			95 00			121 00	
Washington	3	31 00	15 00	56	150 00	120 00	34	77 00	69 00
Wayne									
Williams	18	62 00	29 00	32	54 00	36 00	56	111 00	111 00
Wood		12 00		13	71 00	22 00	5	52 00	17 00
Wyandot	6	8 00	8 00	26	77 00	42 00	26	105 00	68 00
Totals	370	$1,636 00	$843 00	3,929	$7,930 00	$5,955 00	3,295	$7,529 00	$5,607 00

EXHIBIT-SHEET OF COUNTY-FAIRS IN OHIO FOR 1878—Continued.

Counties.	Poultry.			Mechanic arts.			Farm products.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams									
Allen	21	$21 00	$14 00	211	$141 00	$100 00	163	$71 00	$43 00
Ashland									
Ashtabula	90	57 00	33 00	71	172 00	57 00	332	102 00	89 00
Athens	9	10 00	8 00	20	62 00	24 00	43	24 00	17 00
Auglaize	19	9 00	9 00	64	75 00	60 00	110	60 00	57 00
Belmont	44	15 00	26 00	38	257 00	30 00	209	78 00	73 00
Brown	40	9 00	10 00	65	138 00	45 00	397	56 00	46 00
Butler	104	45 00	39 00	325	276 00	262 00	264	60 00	61 00
Carroll	38	20 00	20 00	61	55 00	55 00	112	37 00	37 00
Champaign	23	48 00	12 00	44	Dip.		125	75 00	63 00
Clarke	184	210 00	128 00	69	332 00	98 00	189	225 00	106 00
Clermont	39	26 00	26 00	70	121 00	121 00	324	20 00	20 00
Clinton	29	20 00	14 00	31	118 00	49 00	117	55 00	55 00
Columbiana	103	62 00	40 00	84	175 00	150 00	181	75 00	60 00
Coshocton	31	60 00	24 00	165	256 00	202 00	239	112 00	79 00
Crawford	50	70 00	35 00	126	324 00	186 00	221	326 00	106 00
Cuyahoga	85	70 00	16 00	56	55 00	20 00	176	99 00	61 00
Darke	65	66 00	40 00	167	238 00	118 00	217	102 00	73 00
Defiance	64			110			219		
Delaware	64	25 00	24 00	101	231 00	130 00	260	199 00	117 00
Erie	54	52 00	46 00	167	252 00	174 00	145	111 00	92 00
Fairfield	58	98 00	63 00	76	219 00	171 00	163	327 00	208 00
Fayette									
Franklin									
Fulton	24	12 00	4 00						
Gallia									
Geauga	85	47 00	26 00	63	60 00	41 00	273	47 00	43 00
Greene	20	69 00	12 00	132	69 00	60 00	108	97 00	44 00
Guernsey									
Hamilton	102	135 00	77 00	60	65 00	10 00	155	68 00	62 00
Hancock									

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Poultry.			Mechanic arts.			Farm products.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Hardin	28	$55 00	$17 00	63	$167 00	$74 00	154	$152 00	$55 00
Harrison	7	24 00	14 00	113	194 00	100 00	127	120 00	32 00
Henry	....	....	....	....	....	....	....	....	....
Highland	50	52 00	25 00	90	89 00	39 00	50	30 00	13 00
Hocking	18	19 00	6 00	37	181 00	67 00	119	101 00	50 00
Holmes	47	22 00	17 00	119	66 00	51 00	156	58 00	38 00
Huron	41	56 00	31 00	169	256 00	159 00	237	81 00	56 00
Jackson	6	4 00	1 00	....	....	....	26	75 00	12 00
Jefferson	34	17 00	17 00	76	120 00	52 00	198	73 00	49 00
Knox	34	37 00	17 00	168	375 00	120 00	73	145 00	42 00
Lake	24	21 00	13 00	47	76 00	41 00	135	59 00	44 00
Lawrence	32	15 00	8 00	68	92 00	41 00	150	128 00	51 00
Licking	72	91 00	82 00	612	818 00	653 00	311	440 00	218 00
Logan	31	43 00	43 00	182	260 00	260 00	246	109 00	109 00
Lorain	170	50 00	42 00	98	176 00	168 00	66	88 00	97 00
Lucas	....	....	....	....	....	....	....	....	....
Madison	....	....	....	....	....	....	....	....	....
Mahoning	176	70 00	63 00	106	188 00	97 00	345	176 00	176 00
Marion	....	....	....	304	300 00	174 00	700	230 00	105 00
Medina	112	75 00	55 00	87	75 00	50 00	138	60 00	40 00
Meigs	2	14 00	14 00	76	182 00	140 00	253	72 00	72 00
Mercer	20	11 00	7 00	20	115 00	10 00	144	58 00	35 00
Miami	18	23 90	3 00	61	182 00	80 00	130	106 00	71 00
Monroe	3	8 00	1 00	27	72 00	31 00	77	36 00	30 00
Montgomery	....	....	....	....	....	....	....	....	....
Morgan	40	28 00	14 00	86	171 00	87 00	144	63 00	46 00
Morrow	47	33 00	19 00	82	140 00	78 00	217	50 00	50 00
Muskingum	4	29 00	1 00	84	396 00	139 00	43	75 00	30 00
Noble	....	....	....	4	84 00	4 00	15	47 00	7 00
Ottawa	12	16 00	8 00	56	56 00	30 00	70	50 00	19 00
Paulding	....	....	....	45	....	25 00	296	65 00	65 00
Perry	18	26 00	12 00	33	56 00	40 00	202	101 00	96 00

Pickaway	22	31 00	10 00	67	86 00	80 00	119	82 00	68 00
Pike	......	......	......	......	......	......	......	......	......
Portage	67	65 00	34 00	30	80 00	27 00	249	116 00	65 00
Preble	113	......	......	122	......	......	255	......	......
Putnam	10	14 00	6 00	125	109 00	51 00	150	91 00	19 00
Richland	40	50 00	50 00	73	15 00	15 00	75	60 00	60 00
Ross	46	65 00	37 00	26	106 00	23 00	40	96 00	46 00
Sandusky	45	29 00	18 00	107	182 00	105 00	153	114 00	51 00
Scioto	......	......	......	......	......	......	......	......	......
Seneca	28	50 00	......	234	200 00	......	239	130 00	......
Shelby	39	26 00	17 00	72	103 00	49 00	327	85 00	63 00
Stark	123	121 00	100 00	85	116 00	56 00	442	403 00	234 00
Summit	53	......	......	86	......	......	212	......	......
Trumbull	95	111 00	72 00	79	208 00	134 00	100	85 00	55 00
Tuscarawas	31	30 00	......	223	279 00	......	226	83 00	......
Union	79	50 00	50 00	134	113 00	113 00	267	179 00	138 00
Van Wert	2	4 00	1 00	15	35 00	4 00	51	47 00	19 00
Vinton	......	......	......	......	......	......	......	......	......
Warren	......	44 00	......	......	313 00	209 00	......	115 00	83 00
Washington	27	37 00	19 00	48	223 00	61 00	59	254 00	26 00
Wayne	......	......	......	......	......	......	......	......	......
Williams	58	59 00	34 00	103	188 00	78 00	254	117 00	57 00
Wood	30	27 00	23 00	44	148 00	32 00	150	117 00	50 00
Wyandot	22	18 00	10 00	91	129 00	45 00	90	52 00	34 00
Totals	3,421	$2,926 00	$1,757 00	7,053	$11,211 00	$6,055 00	13,022	$7,500 00	$4,388 00

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Horticulture and floriculture.			Fine arts.		
	No. of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Adams	....	....	....	....	....	....
Allen	237	$51 00	$55 00	32	$25 00	$22 00
Ashland	....	....	....	....	....	....
Ashtabula	773	140 00	80 00	135	90 00	43 00
Athens	53	19 00	26 00	....	....	....
Auglaize	191	28 00	27 00	9	5 00	5 00
Belmont	736	91 00	119 00	39	41 00	27 00
Brown	601	94 00	81 00	17	10 00	9 00
Butler	858	189 00	203 00	64	31 00	33 00
Carroll	137	52 00	52 00	18	16 00	16 00
Champaign	129	110 00	76 00	....	10 00	10 00
Clarke	586	197 00	165 00	40	54 00	26 00
Clermont	1,384	123 00	123 00	46	36 00	36 00
Clinton	144	115 00	82 00	....	....	....
Columbiana	601	245 00	195 00	28	45 00	45 00
Coshocton	195	80 00	53 00	54	77 00	44 00
Crawford	421	247 00	169 00	60	89 00	57 00
Cuyahoga	150	58 00	42 00	42	30 00	28 00
Darke	961	172 00	197 00	53	42 00	41 00
Defiance	556	....	....	49	....	....
Delaware	571	120 00	118 00	89	70 00	44 00
Erie	466	214 00	137 00	....	....	....
Fairfield	313	378 00	330 00	55	114 00	100 00
Fayette	....	....	....	....	....	....
Franklin	....	....	....	....	....	....
Fulton	....	....	....	....	....	....
Gallia	....	....	....	....	....	....
Geauga	589	119 00	109 00	36	16 00	9 00
Greene	245	96 00	81 00	15	30 00	19 00
Guernsey	....	....	....	....	....	....
Hamilton	250	216 00	208 00	....	....	....
Hancock	....	....	....	....	....	....

Hardin	168	114 00	95 00	16	24 00	10 00
Harrison	687	120 00	100 00	90	70 00	50 00
Henry						
Highland	285	168 00	109 00	39	95 00	60 00
Hocking	225	60 00	41 00	1	4 00	3 00
Holmes	151	57 00	37 00	25	21 00	17 00
Huron	70	59 00	34 00	50	50 00	25 00
Jackson	21	42 00	28 00			
Jefferson	725	123 00	94 00	32	18 00	11 00
Knox	132	92 00	73 00	24	90 00	25 00
Lake	213	59 00	40 00	6	8 00	4 00
Lawrence	597	250 00	174 00	34	55 00	21 00
Licking	512	262 00	196 00	91	156 00	143 00
Logan	570	194 00	194 00	203	60 00	60 00
Lorain	452	116 00	99 00	26	41 00	40 00
Lucas						
Madison						
Mahoning	617	208 00	178 00	52	60 00	44 00
Marion						
Medina	215	60 00	48 00	63	48 00	12 00
Meigs	131	62 00	53 00	11	51 00	51 00
Mercer	145	75 00	45 00	5	Diplomas.	Diplomas.
Miami	371	224 00	204 00	17	76 00	46 00
Monroe	201	45 00	21 00	22	5 00	5 00
Montgomery						
Morgan	351	104 00	98 00	25	17 00	13 00
Morrow	345	58 00	51 00	42	25 00	24 00
Muskingum	200	139 00	81 00	18	42 00	23 00
Noble	13	49 00	25 00			
Ottawa	269	105 00	60 00	24	30 00	9 00
Paulding	202	55 00	55 00	20	13 00	13 00
Perry	461	164 00	224 00	20	21 00	21 00
Pickaway	230	199 00	137 00	33	22 00	15 00
Pike						
Portage	243	35 00	26 00	2	26 00	2 00
Preble	611			40		
Putnam	500	30 00	50 00	50	14 00	12 00
Richland	126	37 00	37 00	19		
Ross	281	367 00	252 00	51	87 00	39 00
Sandusky	132	104 00	59 00	60	58 00	36 00
Scioto						
Seneca	376	65 00		75	30 00	

EXHIBIT-SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Horticulture and floriculture.			Fine arts.		
	No of entries.	Amount offered.	Amount awarded.	No. of entries.	Amount offered.	Amount awarded.
Shelby	374	$94 00	$45 00	22	$57 00	$25 00
Stark	370	147 00	127 00	25	17 00	17 00
Summit	373			56		
Trumbull	924	265 00	229 00	50	60 00	45 00
Tuscarawas	455	81 00		40	60 00	
Union	279	81 00	81 00	58	64 00	48 00
Van Wert	99	59 00	32 00	16	27 00	2 00
Vinton						
Warren		191 00	127 00		115 00	87 00
Washington	52	50 00	42 00	9	35 00	4 00
Wayne						
Williams	583	197 00	160 00	34	97 00	34 00
Wood	364	148 00	94 00			
Wyandot	149	115 00	88 00	16	39 00	9 00
Totals	25,997	$8,483 00	$6,771 00	2,493	$2,719 00	$1,719 00

EXHIBIT SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Textile fabrics.			Non-enumerated.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	311	$82 00	$105 00	....	....	....
Allen	....	....	....	....	....	....
Ashland	477	124 00	....	90	$20 00	$16 00
Ashtabula	....	....	....	108	....	288 00
Athens	22	7 00	6 00	....	....	....
Auglaize	390	142 00	60 00	17	6 00	....
Belmont	255	58 00	53 00	416	....	36 00
Brown	372	143 00	163 00	....	....	....
Butler	100	74 00	74 00	143	21 00	21 00
Carroll	33	Diplomas.	....	10	....	....
Champaign	127	101 00	54 00	18	....	....
Clarke	227	48 00	48 00	295	....	34 00
Clermont	153	106 00	72 00	65	....	....
Clinton	275	115 00	90 00	175	....	....
Columbiana	172	48 00	61 00	2	26 00	17 00
Coshocton	233	253 00	133 00	....	....	....
Crawford	214	104 00	71 00	95	....	11 00
Cuyahoga	287	106 00	119 00	....	....	....
Darke	547	....	....	226	....	....
Defiance	228	183 00	83 00	578	19 00	19 00
Delaware	500	409 00	275 00	109	....	20 00
Erie	137	191 00	158 00	....	....	....
Fairfield	....	....	....	....	....	....
Fayette	....	....	....	....	....	....
Franklin	....	....	....	....	....	....
Fulton	....	....	....	....	....	....
Gallia	276	66 00	51 00	132	....	14 00
Geauga	50	105 00	33 00	....	....	....
Greene	....	....	....	....	....	....
Guernsey	152	122 00	57 00	43	283 00	133 00
Hamilton	....	....	....	....	....	....
Hancock	77	59 00	27 00	113	....	14 00

EXHIBIT SHEET OF COUNTY FAIRS IN OHIO FOR 1878—Continued.

Counties.	Textile Fabrics.			Non-Ennmerated.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Hardin	300	$130 00	$90 00			
Harrison						
Henry	222	158 00	70 00		$318 00	$412 00
Highland	72	108 00	33 00	3	37 00	3 00
Hocking	186	71 00	48 00			
Holmes	263	160 00	109 00	129	200 00	143 00
Huron	6	25 00	5 00			
Jackson	206	68 00	47 00	198		18 00
Jefferson	126	116 00	65 00			
Knox	144	110 00	49 00	10		18 00
Lake	136	80 00	53 00	13	340 00	
Lawrence	319	314 00	255 00	82		
Licking				87		
Logan	51	40 00	30 00	228	77 00	71 00
Lorain						
Lucas						
Madison	145	48 00	25 00	322	300 00	50 00
Mahoning	420	335 00	212 00		26 00	
Marion	273	65 00	40 00	87		23 00
Medina	25	30 00	30 00			
Meigs	57	103 00	14 00	75	300 00	129 00
Mercer	84	117 08	76 00	30	115 00	115 00
Miami	155	50 00	36 00			
Monroe						
Montgomery	141	86 00	61 00	8	12 00	9 00
Morgan	159	75 00	72 00	15	30 00	33 00
Morrow	66	122 00	44 00	33	89 00	53 00
Muskingum				37		28 00
Noble	90	30 00	27 00			
Ottawa	50	30 00	30 00	45	25 00	25 00
Paulding	180	120 00	143 00	73	255 00	129 00
Perry	102	84 00	62 00	4		

Pickaway						
Pike	41	50 00	14 00	75		46 00
Portage	132			181		
Preble	110	45 00	30 00	25	17 00	15 00
Putnam	42	5 00	5 00	16		
Richland	107	181 00	63 00			
Ross	100	81 00	39 00	192	99 00	97 00
Sandusky						
Scioto	252	80 00		23	50 00	
Seneca	145	96 00	54 00	24	31 00	16 00
Shelby	70	50 00	45 00	283	315 00	277 00
Stark	350			116		
Summit	183	126 00	78 00	87	85 00	67 00
Trumbull	19	54 00		17		
Tuscarawas	272	196 00	190 00			
Union	59	83 00	31 00			
Van Wert						
Vinton		77 00	53 00			157 00
Warren	70	219 00	59 00	2	8 00	
Washington						
Wayne	147	146 00	57 00	54	150 00	41 00
Williams	198	88 00	40 00	134		
Wood	90	119 00	71 00			
Wyandot						
Totals	11,980	$7,017 00	$4,348 00	5,343	$3,254 00	$2,598 00

FINANCIAL EXHIBIT OF COUNTY AGRICULTURAL SOCIETIES FOR THE YEAR 1878.

Counties.	Amount in treasury at last report.	Amount of deficit at last report.	Amount received for gate and entrance fees.	Booth rents, permits, etc.	Amount received from other sources.
Adams					
Allen	$147 34		$1,340 00	$317 35	$156 50
Ashland					
Ashtabula			2,034 77	140 12	805 45
Athens		$56 11	118 60	170 50	404 29
Auglaize	68 52	225 00	696 50	231 50	110 00
Belmont		733 73	1,948 82	41 85	198 57
Brown	660 85		1,530 61	287 65	436 50
Butler	89 70		5,938 82	1,891 12	1,357 06
Carroll	6 69		2,268 13	251 55	72 45
Champaign	12 38		833 24	280 90	269 98
Clarke	56 88		2,658 93	661 00	222 99
Clermont	407 89				2,080 00
Clinton		3,400 00	2,849 11		413 05
Columbiana		70 64	1,880 63	146 25	385 98
Coshocton	1,492 04		2,488 78	435 50	1,566 05
Crawford			1,283 00	279 00	469 00
Cuyahoga	202 08		1,024 15	115 37	120 67
Darke	137 60		3,043 55	1,227 85	380 04
Defiance		27 88	1,810 71	1,005 40	1,845 50
Delaware		271 63	1,924 42	294 95	666 75
Erie	4 16		3,382 64	276 00	882 27
Fairfield	1,104 75		5,920 86	1,197 00	169 09
Fayette					
Franklin	1,200 00				150 00
Fulton		156 74	875 25	218 45	96 86
Gallia	156 60				921 62
Geauga		13 63	1,838 60	229 36	70 95
Greene		961 00	2,239 20	310 00	205 93
Guernsey					
Hamilton		338 14	1,933 25	589 25	340 00
Hancock			2,007 90	260 95	
Hardin	255 56		1,158 25	355 00	371 18
Harrison		2,400 00	1,733 00	275 00	340 00

Henry	....	....	....	....	....
Highland	....	....	4,560 00	....	....
Hocking	3 89	....	1,065 85	190 50	130 62
Holmes	67 79	....	1,109 10	416 00	90 90
Huron	143 64	....	1,353 12	148 50	542 88
Jackson	....	40 00	238 43	13 00	....
Jefferson	92 54	....	1,624 20	235 00	414 03
Knox	....	....	1,873 20	106 00	934 93
Lake	77 01	....	892 72	69 00	107 17
Lawrence	20 22	....	1,083 72	93 08	367 00
Licking	....	2,000 00	4,188 50	870 75	773 65
Logan	580 27	....	2,131 83	1,137 47	115 14
Lorain	59 09	....	2,100 93	135 00	359 30
Lucas	70 43	....	....	....	6,867 86
Madison	....	....	....	....	....
Mahoning	39 38	....	2,301 00	523 05	955 00
Marion	139 55	....	2,904 75	580 13	1,067 44
Medina	....	75 00	1,590 00	205 20	4,000 00
Meigs	165 00	....	1,493 00	166 00	54 00
Mercer	36 45	....	510 50	176 50	93 00
Miami	10 75	....	799 30	165 75	221 20
Monroe	16 49	....	954 52	75 00	29 00
Montgomery	15 35	....	....	....	401 00
Morgan	52 36	....	1,083 27	91 10	501 81
Morrow	266 15	....	1,722 05	239 10	300 41
Muskingum	266 80	....	3,100 58	389 59	507 05
Noble	....	....	430 82	86 50	99 76
Ottawa	16 91	....	282 93	82 91	276 68
Paulding	....	21 88	422 15	99 50	4 75
Perry	....	287 85	1,112 62	185 00	421 97
Pickaway	30 98	....	2,109 73	350 05	124 37
Pike	....	....	....	....	....
Portage	....	....	462 80	20 00	122 92
Preble	446 42	....	3,161 25	663 00	438 52
Putnam	....	210 00	734 50	76 00	225 00
Richland	24 00	....	949 42	69 70	271 00
Ross	....	....	2,638 74	475 75	724 65
Sandusky	15 76	....	2,888 40	852 00	1,037 18
Scioto	....	....	....	....	....
Seneca	152 02	....	2,289 95	314 00	189 00
Shelby	....	3 66	1,464 45	275 25	90 00
Stark	....	195 53	3,705 97	394 00	554 75

FINANCIAL EXHIBIT OF COUNTY AGRICULTURAL SOCIETIES FOR THE YEAR 1878—Continued.

Counties.	Amount in treasury at last report.	Amount of deficit at last report.	Amount received for gate and entrance fees.	Booth rents, permits, etc.	Amount received from other sources.
Summit			$5,276 70	$895 06	$324 82
Trumbull	$34 39		2,324 40	348 00	950 85
Tuscarawas			1,678 14	641 31	
Union			2,478 00	725 10	93 65
Van Wert	116 81		596 82	80 00	579 12
Vinton					
Warren	19 55		3,627 00	262 50	379 50
Washington			1,037 95	19 00	203 35
Wayne					
Williams	75		973 75	131 00	166 10
Wood		$113 94	675 25	359 55	96 00
Wyandot	10 66		1,275 00	169 00	
Totals			$138,039 03	$25,088 67	$41,716 06

FINANCIAL EXHIBIT OF COUNTY AGRICULTURAL SOCIETIES FOR THE YEAR 1878—Continued.

Counties.	Amount paid in premiums.	Amount paid for real estate, buildings, and permanent improvements.	Amount paid for current expenses other than improvements.	Amount remaining in treasury.	Amount deficit
Adams					
Allen	$851 50	$639 16	$256 93	$214 00	
Ashland					
Ashtabula	1,052 12	436 55	917 64		
Athens	984 75	400 00	280 18	70 35	
Auglaize	540 00	116 00	447 00	3 52	$398 10
Belmont	1,393 75	558 47	709 71		1,206 47
Brown	1,088 50	1,218 67	704 67		96 23
Butler	2,764 50	1,733 46	3,055 61	1,722 93	
Carroll	1,118 16	200 00	1,276 83	3 83	
Champaign	962 79	99 50	425 19		190 98
Clarke	2,133 45	68 60	1,154 45	243 30	
Clermont	1,068 10		510 23	909 56	
Clinton	2,000 00	75 00	287 16		2,500 00
Columbiana	1,440 70		1,034 04		132 52
Coshocton	1,266 50	1,100 09	1,468 47	2,147 31	
Crawford	1,275 00		756 00		
Cuyahoga	567 00	91 36	736 75	67 16	
Darke	2,018 12	1,175 12	1,100 18	220 42	
Defiance	2,033 22	1,486 45	1,155 86		41 80
Delaware	917 00	547 00	1,221 37		70 88
Erie	2,045 70	1,011 14	2,230 36		742 13
Fairfield	3,562 50	637 95	1,375 33	2,815 92	
Fayette					
Franklin			800 00	550 00	
Fulton	615 80	562 73	253 55		398 26
Gallia		1,019 66	64 48		5 92
Geauga	1,052 50	197 10	878 04		
Greene	1,975 00	400 00	636 16		1,217 03
Guernsey					
Hamilton	1,659 50	1,106 09	103 00		354 23
Hancock	2,018 19		225 00	25 56	

FINANCIAL EXHIBIT OF COUNTY AGRICULTURAL SOCIETIES FOR THE YEAR 1878—Continued.

Counties.	Amount paid in premiums.	Amount paid for real estate, buildings, and permanent improvements.	Amount paid for current expenses other than improvements.	Amount remaining in treasury.	Amount deficit
Hardin	$1,206 00		$476 49	$457.50	
Harrison	1,262 00	$265 00	821 00		
Henry					
Highland	3,800 00		760 00		
Hocking	852 35	181 60	338 11	18 80	
Holmes	881 25		638 03	164 51	
Huron	1,648 00		684 71		144 57
Jackson	81 25		171 00		
Jefferson	1,206 01	517 08	406 79	235 89	
Knox	2,000 00		1,039 68		125 55
Lake	594 50		456 21	95 19	
Lawrence	688 50	404 70	546 76		
Licking	3,186 50	86 50	1,001 33		
Logan	2,259 75		1,532 73	172 17	
Lorain	1,162 38	676 22	650 57	175 15	
Lucas		6,678 36		259 93	
Madison					
Mahoning	1,575 20	510 00	1,659 99	73 24	
Marion	2,392 75	489 61	1,785 07	24 44	
Medina	1,010 00	4,985 20	425 00		700 00
Meigs	1,301 00	289 00	435 00	53 00	
Mercer	505 50	1,900 00	305 20		
Miami	529 60	129 62	503 29	34 49	
Monroe	581 47		436 40	57 14	
Montgomery		347 00	6 00	63 25	
Morgan	418 40	200 00	1,052 78	57 36	
Morrow	975 22	706 67	617 63	228 19	
Muskingum	1,618 20	708 92	1,748 04	188 56	
Noble	395 69	40 71	185 25		5 43
Ottawa	206 90	408 00	230 64		
Paulding	302 47		225 93		23 88
Perry	748 27	400 00	380 43		96 86

Pickaway	1,274 00		1,185 29	155 84	
Pike					
Portage	269 20	187 60	187 18		
Preble	1,586 70	1,851 10	1,140 27	131 12	
Putnam	927 18	245 27	100 15		447 10
Richland	894 45		384 67		
Ross	2,190 80		1,363 02	276 32	
Sandusky	1,609 50	660 21	2,518 33	5 30	
Scioto					
Seneca	1,428 75	147 89	1,263 44	101 89	
Shelby	1,235 00	109 13	409 99	71 92	
Stark	2,394 40	786 44	946 95	291 40	
Summit	1,183 12	1,143 58	1,957 72	2,218 16	
Trumbull	1,940 00	810 [illegible]0	895 12	12 22	
Tuscarawas	1,010 75	281 44	907 19	120 07	
Union	1,570 00	736 00	727 00	[illegible]63 75	
Van Wert	329 68	641 85	401 35		
Vinton					
Warren	2,265 09		2,132 79	190 67	
Washington	307 50	146 10	806 70		
Wayne					
Williams	943 75	156 00	290 56		118 71
Wood	730 00		350 64		63 78
Wyandot	1,250 00		134 09	70 57	
Totals	$97,133 38	$42,707 20	$61,726 96		

VALUE OF REAL ESTATE, NUMBER OF MEMBERS, ETC., OF COUNTY AGRICULTURAL SOCIETIES.

Counties.	Number of acres in fair grounds.	Cash value of real estate, and improvements thereon.	Number of members.	Number of volumes in library.	Date of incorporation or organization.
Adams	....	....	....	....	....
Allen	25	....	146	....	1852
Ashland	....	....	....	....	....
Ashtabula	20	$4,000 00	300	....	....
Athens	28	5,500 00	540	....	April, 1851
Auglaize	15	2,500 00	243	....	May, 1852
Belmont	24	6,000 00	127	....	1848
Brown	16	3,000 00	525	....	1849
Butler	55	50,000 00	....	....	....
Carroll	20	5,000 00	500	....	1850
Champaign	32	5,000 00	177	....	1847
Clarke	50	50,000 00	427	50	1852
Clermont	20	4,000 00	850	....	....
Clinton	32	10,000 00	1,200	....	1849
Columbiana	30	5,000 00	435	....	....
Coshocton	34	21,500 00	227	....	1852
Crawford	33	....	360	5	1852
Cuyahoga	20	....	....	....	....
Darke	44½	8,000 00	987	....	1852
Defiance	60	8,500 00	....	....	1848
Delaware	48	30,000 00	1,865	....	1847
Erie	20	75,000 00	1,014	....	1833
Fairfield	20	20,000 00	300	....	1850
Fayette	....	....	....	....	....
Franklin	95	150,000 00	16	40	1851
Fulton	40	6,000 00	250	....	1857
Gallia	18½	5,000 00	104	30	1852
Geauga	20	3,000 00	474	....	1831
Greene	36	....	136	....	1839
Guernsey	....	....	....	....	....
Hamilton	30	12,000 00	800	....	....
Hancock	....	....	....	....	....
Hardin	30	8,000 00	189	....	....
Harrison	10	4,000 00	500	....	1847

Henry	....	....	....	....	....
Highland	27½	....	176	....	1877
Hocking	7	2,000 00	158	....	1853
Holmes	10	....	164	....	1869
Huron	30	10,000 00	400	....	1843
Jackson	....	....	89	....	....
Jefferson	12½	7,000 00	80	....	1871
Knox	18	8,000 00	3 0	....	1852
Lake	13	3,000 00	607	....	1851
Lawrence	20	6,000 00	111	....	1875
Licking	63	60,000 00	1,586	33	1842
Logan	25	6,000 00	1,412	....	1851
Lorain	17	20,000 00	531	....	1845
Lucas	....	....	....	....	....
Madison	....	....	....	....	....
Mahoning	23½	6,000 00	680	....	1846
Marion	36	16,000 00	570	....	1850
Medina	21½	5,000 00	580	....	1845
Meigs	20	3,000 00	54	....	1851
Mercer	20	1,900 00	80	....	1876
Miami	40	12,000 00	205	....	1846
Monroe	6	300 00	85	....	1851
Montgomery	50	90,000 00	201	....	....
Morgan	26	5,000 00	600	....	1852
Morrow	28	5,000 00	....	....	1852
Muskingum	33	20,000 00	123	....	1846
Noble	10	700 00	159	....	18 7
Ottawa	10	3,500 00	163	....	1870
Paulding	25	1,625 00	59	....	1872
Perry	10	1,200 00	325	....	1869
Pickaway	....	....	....	....	....
Pike	....	....	....	....	....
Portage	16	2 0 00	145	....	1845
Preble	29	6,000 00	12	....	....
Putnam	20	6,000 00	342	....	1856
Richland	....	....	171	....	....
Ross	35	....	....	....	....
Sandusky	28	20,000 00	1,567	....	1852
Scioto	....	....	....	....	....
Seneca	24	15,000 00	250	....	175
Shelby	20	6,000 00	225	....	186
Stark	31	31,000 00	664	....	184

VALUE OF REAL ESTATE, NUMBER OF ACRES, MEMBERS, ETC., OF COUNTY AGRICULTURAL SOCIETIES—Continued.

Counties.	Number of acres in fair grounds.	Cash value of real estate, and improvements thereon.	Number of members.	Number of volumes in library.	Date of incorporation or organization.
Summit	52	$20,000 00	1,500		1849
Trumbull	27	7,000 00	1,057		
Tuscarawas	22	2,000 00	455		1844
Union	40	11,000 00	1,741	50	
Van Wert	25	5,000 00	300		1856
Vinton					
Warren	30	5,000 00	2,450		1850
Washington	20	5,000 00	114		1846
Wayne					
Williams	20	2,500 00	534		1856
Wood	4	800 00	292		1851
Wyandot	28	4,000 00	407		1852
Totals	1,998¼	$940,775 00	34,536		

RECAPITULATION.

ENTRIES AND PREMIUMS.

Class.	No. of entries.	Amount of premiums offered.	Amount of premiums awarded.
Shorthorns	1,928	$6,910 00	$5,819 00
Devons	393	2,743 00	1,174 00
Any other breeds	1,919	6,988 00	4,067 00
Fat cattle and work oxen	672	2,695 00	1,667 00
Thoroughbred horses	447	2,888 00	1,575 00
Roadsters	3,013	6,594 00	5,233 00
General purpose	4,086	9,127 00	7,447 00
Draft	1,836	6,082 00	4,408 00
Speed horses	1,829	25,278 00	22,693 00
Mules and asses	370	1,636 00	843 00
Sheep	3,929	7,930 00	5,955 00
Swine	3,295	7,529 00	5,607 00
Poultry	3,421	2,926 00	1,757 00
Mechanic arts	7,053	11,211 00	6,055 00
Farm products	13,022	7,500 00	4,388 00
Horticulture and floriculture	25,997	8,483 00	6,771 00
Fine arts	2,493	2,719 00	1,719 00
Textile fabrics	11,980	7,017 00	4,348 00
Non-enumerated	5,343	3,251 00	2,598 00
Totals	93,026	$132,510 00	$94,124 00

RECEIPTS, DISBURSEMENTS, MEMBERS, ETC.

Amount received for gate and entrance fees	$138,039 03
" for permits	25,058 67
" from other sources	41,716 06
Amount paid for buildings and improvements	42,707 20
" current expenses	61,726 96
Number of acres occupied for fair purposes	1,998¼
Cash value of real estate and improvements	$940,775 00
Number of members of county societies	34,536

CROP STATEMENTS.

LICKING COUNTY.

The Ohio State Board of Agriculture awarded to Leonard Crow the premium of $30.00 for best crop of five acres barley. Statement as follows:

State of Ohio, Licking County, ss.

Levi B. Crow, being duly sworn, says he accurately measured the land upon which Leonard Crow raised a crop of barley the past season, and the quantity of land is five acres, strict measure.
L. B. Crow.

Sworn to before me this 26th day of December, 1878.
[SEAL.] J. F. Lingafelter, *Notary Public.*

The State of Ohio, Licking County, ss.

Leonard Crow, being duly sworn, says that he raised a crop of barley the past season upon the land measured by Levi B. Crow, and the quantity raised thereon was 261 bushels and 8 pounds, by weight, and that the manner and expense of cultivation was as follows: Ten loads of manure (barnyard) at 50 cents per load, $5.00; four days plowing and harrowing, at $2.50 per day, $10.00; harvesting and placing in shock, $10.00; two days' hauling to market, at $2.50 per day, $5.00. Said crop of barley was raised on said five acres, situated in Licking township, Licking county, Ohio, on clay soil, four-row barley; seed put in on the first day of September, 1877; sown broadcast and harrowed in, sowing 2½ bushels to the acre: and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.
Leonard Crow.

Subscribed in my presence, and sworn to before me, this 26th day of December, 1878.
[SEAL.] J. F. Lingafelter, *Notary Public.*

COSHOCTON COUNTY.

WHEAT.

The following is a statement of a crop of wheat grown by John Burt, Jr., of Tuscarawas township, Coshocton county, Ohio, and harvested the season of 1878:

Soil, light sandy loam; aspect or "lay" of the land, dry, rolling, sloping towards the east. Plowed up a clover sod in August, put on barnyard manure, and again plowed in September; plowed to the depth of five inches, and barrowed twice after second plowing. The sod had lain for three years. The kind of seed planted was Fultz wheat, well cleaned with the fanning-mill before sowing. Sowed September 29th, with drill, 1½ bushel, per acre, and harvested July 9th, when fully ripe. The following is the cost of cultivation:

To 400 loads manure, at 50c. per load	$200 00
To 5 days' plowing, at $3.00 per day	15 00
To 3 days' labor, at $3 00 per day	9 00
To 38 days' harvesting, at $1.80 per day	68 40
To 1 day's marketing, at $1.00 per day	1 00
Total cost	$293 40

Amount of wheat harvested, 362½ bushels, on 8 89/100 acres.

I certify the above to be correct. JOHN BURT, Jr.

The State of Ohio, Coshocton County, ss.

George Miller, being duly sworn, says he accurately measured the land upon which John Burt, Jr, raised a crop of wheat the past season, and the quantity of land is 8 89/100 acres and no more.

Sworn to before me, this 8th day of November, 1878.

J. S. ELLIOTT, *Notary Public.*

The State of Ohio, Coshocton County, ss.

John Burt, Jr., being duly sworn, says that he raised a crop of wheat the past season upon the land measured by George Miller, and the quantity raised thereon was 362½ bushels and no more, measured, and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

Sworn to before me this 7th day of November, 1878.

GEORGE MILLER, *County Surveyor.*

JEFFERSON COUNTY.

CROP OF WHEAT BY JOS. A. KITHCART.

Number of acres, 8; yield, 276 bushels; average yield per acre, 34½ bushels. The wheat was grown partly on limestone and partly on freestone soil. The ground was broken up in the usual manner, the grain sowed broadcast and harrowed in. About three acres were manured before plowing.

CROP OF OATS BY JAS. J. MEHOLLIN.

Number of acres, 8; yield, 528 bushels; average yield per acre, 66 bushels Sowed about the 15th of April, three bushels of seed to the acre. Plowed deep and harrowed twice. Grown on sandy soil.

MAHONING COUNTY.

WHEAT.

Crop of wheat not less than two acres. The soil upon which this crop was raised is high rolling clay loam, subsoil clay and gravel. This was an old, worn out field, plowed in June, 1877, six inches deep. Drilled two bushels of shelled corn per acre on June 28th, using two hundred pounds superphosphate per acre, corn making a very good growth.

Plowed under ten inches deep September 12th; drilled September 20th, using forty quarts of seed per acre. Wheat known as Clawson, using two hundred pounds superphosphate per acre. Harvested July 8th; threshed first week in September, 1878.

First plowing	$4 00
Harrowing and seed corn	3 00
Superphosphate and drilling	8 00
Second plowing	4 00
Harrowing and seed	4 50
Superphosphate and drilling	9 00
Harvesting and hauling	5 00
Threshing, cleaning, and marketing	5 00
Taxes and interest	6 00
Total	$48 50
By 65 bushels wheat, at $1.25 per bushel	81 25
Profit	32 75

J. H. SHIELDS.

State of Ohio, Mahoning County, ss.:

Zenas Turner and H. J. Shields being duly sworn, says that they measured the land on which J. H. Shields raised a crop of wheat, which he enters for the premium offered by the Mahoning County Agricultural Society for 1878, and that there were two acres and twenty rods of land, and no more.

his
ZENAS + TURNER,
mark.
H. J. SHIELDS.

I, Zenas Turner, further swear that I measured and weighed the wheat raised on the land measured by H. J. Shields and myself, and that there were sixty-five bushels, of sixty pounds to the bushel.

his
ZENAS + TURNER,
mark.

Signed in my presence and sworn to before me, this 27th day of December, A D. 1878.
RALPH AGNEW, *Justice of the Peace.*

Crop of wheat not less than six acres. The soil upon which this crop was raised is second or elm bottom land, soil black loam, from eight to twenty inches deep, subsoil clay and gravel. It was the fifth crop on same field, four previous crops receiving no manure. To this crop applied barn-yard manure, at the rate of fifteen loads per acre, plowed under eight inches deep the first week in September. After a thorough harrowing it was drilled September 15th, 1877, using thirty-six quarts of seed per acre, known as Fultz wheat. Harvested July first; threshed first week in August, 1878.

Hauling manure	$30 00
Plowing	18 00
Harrowing	5 00
Seed	18 00
Drilling	5 00
Cutting and shocking	14 00
Hauling, threshing, and marketing	30 00
Interest and taxes on land	27 00
Total	$147 00

By 252 39-60 bushels, at $1.00 per bushel	$252 65
Profit	105 65

J. H. SHIELDS.

State of Ohio, Mahoning County, ss.:

Zenas Turner and H. J. Shields being duly sworn, says that they measured the land on which J. H. Shields raised a crop of wheat, which he enters for the premium offered by the Mahoning County Agricultural Society for 1878, and that there were nine acres of land, and no more.

his
ZENAS + TURNER,
mark.
H. J. SHIELDS.

I, Zenas Turner, further swear that I measured and weighed the wheat raised on the land measured by H. J. Shields and myself, and that there were two hundred and fifty two bushels and thirty-nine pounds.

his
ZENAS + TURNER,
mark.

Signed in my presence and sworn to before me, this 27th day of December, A D. 1878.
RALPH AGNEW, *Justice of the Peace.*

This certifies that we, John Lynn and H. N. Lynn, did, on the 28th day of November, 1878, measure a piece of land for A. S. Lynn, in which there was two and one-sixteenth acres, and also did assist in measuring the wheat grown on said piece of land the past year, and found the amount of said wheat crop to be sixty-five bushels, or 31 17-33 bushels per acre.

JOHN LYNN,
H. N. LYNN.

Before me personally appeared John Lynn and H. N. Lynn and did solemnly affirm and declare that the things set forth in the above statement in relation to A. S. Lynn's wheat crop, wherein their names occur, are true, as they verily believe.
JARED HUSLEY, *Notary Public.*

The land upon which the above crop was raised is a gravelly soil, with clay subsoil; a crop of corn and oats (one of each) preceding wheat crop; plowed the latter part of August, turning under about fifteen loads of barn-yard manure per acre; sowed with drill on the 15th of September, sowing one and a half bushels per acre, with seed known as the Clawson; used about one hundred and twenty-five pounds of superphosphate to the acre.

A. S. LYNN.

Crop of oats not less than two acres. The soil upon which this crop was raised is a black loam, mixed with some clay and gravel; subsoil hard clay and gravel. Two crops of corn had been raised previous, using some barn yard manure on the first and one hundred and twenty five pounds of superphosphate per acre in the hill. Plowed eight inches about the middle of April, and drilled the 25th, using two bushels of seed per acre; seed known as Somerset Oats; no manure used; crushed after drilling.

Plowing 10 acres	$20 00
Harrowing	3 00
Drilling	5 00
Seed, 20 bushels	10 00
Crushing	2 50
Cutting and hauling	23 00
Threshing and weighing	15 00
Taxes and interest	30 00
Total	$110 50
By 19,390 pounds of oats, at $1.00 per hundred	193 90
Profit	83 40

J. H. SHIELDS.

State of Ohio, Mahoning County, ss.:

Zenas Turner and H. J. Shields being duly sworn, says that they measured the land on which J. H. Shields raised a crop of oats, which he enters for the premium offered by the Mahoning County Agricultural Society for 1878, and that there were ten acres, and no more.

his
ZENAS × TURNER.
mark.
H. J. SHIELDS.

I, Zenas Turner, further swear that I weighed the oats raised on the land measured by H. J. Shields and myself, and there were six hundred and forty-six bushels and ten pounds, at thirty pounds to the bushel.

his
ZENAS + TURNER,
mark.

Signed in my presence and sworn to before me, this 27th day of December, A.D. 1878.
RALPH AGNEW, *Justice of the Peace.*

MORROW COUNTY.

WHEAT.

The first premium on a field of wheat was awarded to E. Y. Kingman. This was a piece of black land, well drained, containing 1¼ acres. Three crops of corn and one of oats were grown in succession upon the land. About September 1, 1877, the oats stubble was plowed six inches deep and about twenty-two two-horse wagon loads of thirty-six bushels each of well rotted stable and sheep-shed manure was evenly scattered over the plowed ground. Between September 10 and 15, 2¼ bushels of Fultz wheat was sown broad-cast and harrowed in; wheat cut with reaper 1st day of July; threshed 48 bushels, machine measure, and 50½ bushels struck measure; weighed 65 lbs. per bushel, struck measure, or 43 bushels per acre.

The second premium on wheat was awarded to Lafayette Gates. As per statement, he plowed 1 1-16 acres sward, five years old, August 1, 1877. Soil, clay, mixed with sandstone; harrowed as soon as plowed, on 20th of August; top dressed with twenty loads barnyard manure, stirred up well with a double shovel plow, and September 13, sowed ninety pounds of Clawson wheat, broadcast, shoveled it in and then harrowed the ground. Harvested July 8, threshed August 25, and obtained 38¼ bushels, machine measure, or 36 4-17 bushels per acre.

STARK COUNTY.

WHEAT.

State of Ohio, County of Stark, ss.:

Before me, the undersigned authority, appeared Jesse Deuell and Charles W. Sherman, who make oath and say that on the 5th day of October, A.D. 1878, at the request of Alexander Hurford, they measured a certain piece of ground, the property of said Hurford, located in Canton township, in said county, the area thereof being seven and seven-tenths (7 7-10) acres. Affiants further say that on or about the 1st day of September, A.D. 1878, they helped to thresh the wheat grown upon said area of seven acres and seven-tenths, and measured the yield thereof, and found it to be 348 bushels, being 46 9-10 bushels to the acre; that subsequently they weighed the same, and found the yield to be 359 6-10 bushels, being 48 46-100 bushels per acre. Said wheat being what is termed "Fultz wheat."

J. L. DEUELL,
CHARLES W. SHERMAN.

Sworn to by the said Jesse Deuell and Charles W. Sherman before me, and by them signed in my presence this — day of October, A.D. 1878.

E. M. GRIMES, *Justice of the Peace.*

I herewith give you a statement of the culture of the crop of wheat which I this year entered in competition for the premium on wheat. I cleared the field in the years 1867 and 1868, and in the fall of 1868 I gave it one plowing and sowed it with Mediterranean wheat, and harvested about 20 bushels to the acre in 1869. In the spring of 1870 I planted it in corn, and had an excellent crop, and I again planted the same field in corn in 1871, and had a very good crop. In the spring of 1872 I sowed the same in barley, and threshed about 40 bushels to the acre. I then gave the barley stubbles a very heavy coat of manure, and then sowed it down in wheat in the fall of 1872, and in the spring of 1873 sowed the same in clover and let it rest until the fall of 1876, thinking to take a crop of clover seed off of it, but finding it would make it too late to wait on the clover seed, I put the plows into it, turned it under, and sowed it in wheat on the 8th of September, 1876, and the harvest of 1877 I had a very good crop, but would have been much better, but, unfortunately, just when the wheat was fairly coming into blossom, we had a very heavy rain and wind storm, and it blew the wheat down so flat that it could not fill, and as I had sown the field in clover the spring previous, and the wheat going down so bad that it smothered the clover, I thought I would try it again in wheat. There were a great many stumps in the field, and I went to work and took them all out, except the very largest, and then plowed it up and sowed in wheat again the 12th of September, 1877. The piece of land is 32 by 38 rods square, with a little marsh or pond in it, which is 110 by 110, leaving a net acreage of 7 25-1000 acres, yielding, as it came from the machine, 348 bushels, clean wheat, by measure, being an average of 46½ bushels per acre by measure, or 48 46-60 bushels by weight. I would further state this crop was no heavier in the straw than last year, but it was very nicely filled before any of it fell, and I do think that if I had reaped the field instead of cutting it with the reaper, the yield would have went over 50 bushels per acre.

A. HURFORD.

State of Ohio, County of Stark, ss.:

John Gardner and J. P. Sunday, being duly sworn, say they accurately measured the land upon which Samuel Correll raised a crop of wheat the past season, and the quantity of land is 342 rods, or 2 acres and 22 rods, and no more.

JOHN GARDNER,
J. P. SUNDAY.

J. P. Sunday, being duly sworn, says that he measured and weighed the wheat raised on the above mentioned land, and that there was eighty-four and one-half (84½) bushels, and no more or less.

J. P. SUNDAY.

State of Ohio, County of Stark, ss.:

Before me, the undersigned authority within and for said county, personally appeared John Gardner and J. P. Sunday, who, being duly sworn, say that the statement contained in the foregoing affidavits, to which they have subscribed their names, are true, as they verily believe.

Witness my hand and notarial seal this 30th day of September, 1878.

[SEAL.] GEO. E. BALDWIN,
Notary Public for Stark County, Ohio.

The soil on which the above described crop of wheat was raised is a gravelly loam, and was in clover sod two years old. Plowed nine inches deep the latter part of July, and left in the furrow until the latter part of August, when it was harrowed four times with a common harrow and worked once with a two-horse cultivator.

The seed was put in with a drill, on the 15th day of September, at the rate of one and a half bushels to the acre, of the Fultz variety. There was no manure applied to the land. The wheat was harvested on the 3d day of July.

The expense of raising said crop can be readily estimated by any farmer from the above statement.

SAMUEL CORRELL.

CORN.

Personally appeared before me Peter Welker and Wm. W. Welker, who, being duly sworn, deposes and says that we surveyed a certain piece of land belonging to S E. Martin, in Perry township, Stark county, Ohio, which was planted with corn in 1878, and from our survey the said piece of land contains two acres, and no more.

PETER WELKER.
WM. W. WELKER.

Sworn to and subscribed in my presence, by the said Peter Welker and Wm. W. Welker, this the 12th day of November, 1878.

ISAAC H. BROWN, *Justice of the Peace.*

CERTIFICATE OF WEIGH-MASTER.

Corn from E. S. Martin—

Gross	18,480 pounds.
Tare	6,900 "
Net	11,580 pounds.

Massillon, Ohio, *December* 24, 1878.

A. D. Miller—*Sir:* I shall endeavor to give you the manner of cultivation of corn crop as nearly as I can: The ground upon which I planted was an old pasture, plowed about the middle of March, 1878, with one of L. M. Gibb's Champion plows, with spear cutter attached. General depth about five inches. The sod was harrowed twice with a sharp steel-toothed harrow; then it was shoveled with a double shovel plow; harrowed again, and marked both ways with sharp plow, width between rows about three feet eight inches; planted May 16th, from three to four grains in hill; corn was worked from first to last with double shovel plow, being four times in all twice to the row. After the third plowing it was hand-hoed, to free the hills from weeds. The last cultivation was executed the last week in June. It might be well enough to state, also, that after the corn came up I scattered corn (shelled) all over the field daily for about one week in order to keep crows, blackbirds, pigeons, etc., from uprooting my corn which I planted.

E. S. Martin.

OATS.

State of Ohio, Stark County, ss.:

J. P. Sunday and G. C. Pontius being duly sworn, say they have accurately measured the land upon which Samuel Correll raised a crop of oats the past season, and the quantity of land is three hundred and twenty-five and one-half rods and no more.

J. P. Sunday,
G. C. Pontius,

J. P. Sunday being duly sworn, says that he weighed the oats raised on the above mentioned land, and that there was one hundred and twenty-nine bushels and seven pounds of oats, and no less.

J. P. Sunday.

Sworn to and subscribed before me, this 1st day of October, A. D. 1878.

[seal.] A. Pontius, *Notary Public.*

The land on which I raised the above crop of oats is second bottom, loamy soil, with gravel subsoil; was a corn stubble, having been in corn two years in succession; manured at the rate of ten loads of stable manure per acre when put in corn first; was plowed for oats about the 15th of April; was harrowed twice with a common harrow. The seed was put in with a drill on the 23th day of April, at the rate of two bushels to the acre. The oats was harvested the 23th day of July.

Samuel Correll.

POTATOES.

State of Ohio, County of Stark, ss.:

Personally appeared Peter Geary and John P. Geary before me, S. Slanker, a Notary Public in and for Stark county, who made solemn oath that they raised on one-fourth of an acre of ground, on the Bondfield Farm, this season, forty-five bushels Victor potatoes.

Peter Geary,
John P. Geary.

Sworn to and subscribed before me, this 12th day of October, A. D. 1878.

[seal.] S. Slanker, *Notary Public.*

To the Stark County Agricultural Society:

GENTLEMEN: The two acres upon which I raised the crop of potatoes exhibited at the fair for 1878 on sandy soil. The year 1877 the ground was pastured, and in the spring of the present year turned down early. After the plowing the ground was harrowed twice; then scored about three feet apart both ways. The potatoes were put in the ground from four to five inches, covered with hoe; planted about 20th of May. After planting, the ground was rolled as soon as the tops appeared; it was harrowed twice, and soon after plowed and hoed the last time about June 20th. Four days were spent in picking the bugs off. From three to four eyes were put in a hill. The variety was the Victor.

ANDREW PEARSON.

To the Board of Agriculture of the Stark County Agricultural Society:

We, Lewis Bloomfield and Lorin C. Wise, say that we have measured the ground and yield of potatoes for A. M. Wise, and find there was one-fourth of an acre of land, and the yield therefrom is forty-two bushels, the product of 1878.

L. A. BLOOMFIELD,
LORIN C. WISE.

Sworn to and subscribed before me, a Notary Public, this 1st day of October, 1878.

R. Z. WISE, *Notary Public.*

I raised the above crop of potatoes on new ground—ground that had not been farmed previously. Scored it out one way, and planted in hills about sixteen inches apart, two cut potatoes being put in a hill. Planted the latter part of May, and worked three times with shovel-plow, hoeing the last time. No manure used.

P. S.—Scored out three and one-half feet apart.

Yours truly,

A. M. WISE.

TRUMBULL COUNTY.

CORN.

H. C. Fuller makes the following statement of the cost of cultivating a crop of corn of two acres. This field has been planted two years in succession in corn.

1878.			Dr.
April	15.	To 30 loads of manure, at 50 cents per load	$15 00
	22.	To 1 day's plowing, at $2.50 per day	2 50
	23.	To 1 day's plowing, at $2.50 per day	2 50
May	13.	To 1 day's rolling and harrowing, at $2.50 per day	2 50
	14.	To ⅓ day's marking out corn ground, at $2.00 per day	66
	15.	To 14 quarts of seed corn, at $1.00 per bushel	1 25
	15.	To 4 men ¼ day each, at 90 cents per day	90
	30.	To 1 day's cultivating, at $2.50 per day	2 50
	30.	To 1 day's hoeing, at 90 cents per day	90
June	13.	To 1 day's cultivating, at $2.50 per day	2 50
	13.	To 1½ day's hoeing, at 90 cents per day	1 35
July	12.	To 1 day's plowing out corn, at $2.50 per day	2 50
	13.	To 1½ day's hoeing, at 90 cents per day	1 35
Sept.	24.	To 2 days' cutting up corn, at 90 cents per day	1 80
Oct.	30.	To 4 days' husking, at 75 cents per day	3 00
		Total	$41 21

State of Ohio, County of Trumbnll, ss.:

John Fuller being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of corn the past season, and the quantity of land is two acres and no more.

JOHN FULLER.

Sworn to before me, this 1st day of November, 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

State of Ohio, County of Trumbull, ss.:

H. C. Fuller being duly sworn, says that he raised a crop of corn the past season upon the ground measured by John Fuller, and that the quantity of corn raised thereon was four hundred bushels, and no less, measured in a sealed measure; and the statements in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me this 4th day of November, A.D. 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

H. C. Fuller makes the following statement of the cost of cultivating a crop of corn of two acres. The field has been planted two years in succession in corn.

1878.			*Dr.*
April	15.	To 30 loads of manure, at 50 cents per load	$15 00
	24.	To 1 day's plowing, at $2 50 per day	2 50
	25.	To 1 day's plowing, at $2.50 per day	2 50
May	13.	To ½ day's rolling and harrowing, at $2.50 per day	2 50
	14.	To ⅓ day's marking, at $2 00 per day	66
	16.	To 14 quarts seed corn, at $1.00 per bushel	1 25
	16.	To 4 men ¼ day each, at 90 cents per day	90
June	1.	To 1 day's cultivating, at $2.50 per day	2 50
	1.	To 1 day's hoeing, at 90 cents per day	90
	24.	To 1 day's cultivating, at $2 50 per day	2 50
	25.	To 1½ day's hoeing, at 90 cents	1 35
July	15.	To 1 day's plowing out corn, at $2.50 per day	2 50
	16.	To 1½ day's hoeing, at 90 cents per day	1 35
Sept.	25.	To 2 days' cutting up corn, at 90 cents per day	1 80
Nov.	2.	To 4 days' husking, at 75 cents per day	3 00
		Total	$41 21

State of Ohio, County of Trumbull, ss.:

John Fuller being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of corn the past season, and the quantity of land is two acres and no more.

JOHN FULLER.

Sworn to before me this 1st day of November, 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

State of Ohio, County of Trumbull, ss.:

A. C. Fuller being duly sworn, says that he raised a crop of corn the past season upon the ground measured by John Fuller, and that the quantity of corn raised thereon was three hundred and sixty-two and six-sevenths bushels, and no less, measured in a sealed measure; and the statement in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me and subscribed in my presence, this 4th day of November, A.D. 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

State of Ohio, County of Trumbull, ss.:

J. L. Kennedy being duly sworn, says that he accurately measured the land upon which E. Alderman raised a crop of corn the past season, and the quantity of land is two acres and no more.

JAMES L. KENNEDY.

Sworn to before me this 4th day of November, 1878.

D. R. GILBERT, *Justice of the Peace.*

State Ohio, County of Trumbull, ss.:

E. Alderman being duly sworn, says that he raised a crop of corn the past season upon the ground measured by J. L. Kennedy; the quantity of grain raised thereon was five hundred and thirty-eight bushels and twenty pounds, and no less; and the statement in regard to the manner of cultivation is correct, to the best of my knowledge.

E. ALDERMAN.

Sworn to before me this 4th day of November, 1878.

D. R. GILBERT, *Justice of the Peace.*

Statement of cost, and manner of cultivation:

Plowing and harrowing, 2 days	$4 00
Planting, 1 day	75
Cultivating, 1½ day	1 75
Hoeing, 2 days	1 50
Total cost	$8 00

The ground was sod; black loamy soil. No manure of any kind was used. Planted on the 18th day of May, in rows three and one-half feet apart. Cultivated with shovel-plow.

State of Ohio, Trumbull County. ss.:

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of corn the past season, and the quantity of land is two acres and no more.

DAVID CALDWELL.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

State of Ohio, Trumbull County, ss.:

John N. McCombs, being duly sworn, says that he raised a crop of corn, the past season, upon the ground measured by David Caldwell, and that the quantity of corn raised thereon was one hundred and twenty-eight bushels, of seventy pounds to the bushel, and no less. The cultivation of this corn was in the usual way, without any fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of corn the past season, and the quantity of land is two acres and no more.

DAVID CALDWELL,

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

John N. McCombs, being duly sworn, says that he raised a crop of corn the past season upon the ground measured by David Caldwell, and that the quantity of corn raised thereon was one hundred and forty-eight bushels, of seventy pounds to the bushel and no less. The cultivation of this corn was in the usual way, without any fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this first day of November, A D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

OATS

H. C. Fuller makes the following statement of the cost of cultivating two acres of oats. Corn stubble turned over:

1878.		*Dr.*
April 4.	To 1 day's plowing, at $2 50 per day	$2 50
5.	To 1 day's plowing, at $2.50 per day	2 50
9.	To ½ day's harrowing, at $2.50 per day	1 25
13.	To 1 day's harrowing in oats, at $2.50 per day	2 50
19.	To ⅓ day's rolling, at $1.00 per day	33
19.	To 5 bushels of seed oats, at 40 cents per bushel	2 00
July 31.	To ½ day's reaping oats with machine, at 75c. per acre	1 50
31.	To 1 day's binding, at 90 cents per day	90
Aug. 16.	To 2 hands hauling in oats, at 90 cents per day	1 80
Sept. 2.	To threshing 144 bushels, at 2½c. per bushel	3 60
	Total	$18 88

The State of Ohio, Trumbull County, ss.:

John Fuller, being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of oats the past season, and the quantity of land is two acres and no more.

JOHN FULLER.

Sworn to and subscribed before me this 1st day of November, A.D. 1878.

JAS. A. BLACKBURN, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

H. C. Fuller, being duly sworn, says that he raised a crop of oats the past season upon the ground measured by John Fuller, and that the quantity of oats raised thereon was 144 bushels and no less, measured in a sealed measure, and the statements in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me this 4th day of November, A D. 1878.

JAS. A. BLACKBURN, *Justice of the Peace.*

H. C. Fuller makes the following statement of the cost of cultivating two acres of oats. Corn stubble turned over:

1878.		*Dr.*
April 2.	To 1 day's plowing, at $2.50 per day	$2 50
3.	To 1 day's plowing, at $2.50 per day	2 50
8.	To ½ day's harrowing, at $2.50 per day	1 25
18.	To 1 day's harrowing in oats, at $2.50 per day	2 50
19.	To ⅓ day's rolling, at $1.00 per day	33
19.	To 5 bushels of seed oats, at 40c. per bushel	2 00
July 31.	To ½ day's reaping oats with machine, at 75c. per acre	1 50
31.	To 1 day's binding, at 90c. per day	90
Aug. 15.	To 2 hands hauling in oats, at 90c. per day	1 80
Sept. 2.	To threshing 146 bushels, at 2½c. per bushel	3 65
	Total	$18 93

The State of Ohio, Trumbull County, ss.:

John Fuller, being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of oats the past season, and the quantity of land is two acres and no more.

JOHN FULLER.

Sworn to before me this 1st day of November, A.D. 1878.

JAS. A. BLACKBURN, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

H. C. Fuller, being duly sworn, says that he raised a crop of oats the past season upon the ground measured by John Fuller, and that the quantity of oats raised thereon was 146 bushels and no less, measured in a sealed measure, and the statement in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me, and subscribed in my presence this 9th day of November, 1878.

JAS. A. BLACKBURN, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of oats the past season, and the quantity of land is two acres, and no more.

DAVID CALDWELL.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

John N. McCombs, being duly sworn, says that he raised a crop of oats the past season, upon the ground measured by David Caldwell, and the quantity of oats raised thereon was one hundred and forty bushels, and no less. The cultivation of this oats was in the usual way, without fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of oats the past season, and the quantity of land is two acres, and no more.

DAVID CALDWELL.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

John N. McCombs, being duly sworn, says that he raised a crop of oats the past season, upon the ground measured by David Caldwell, and that the quantity of oats raised thereon was one hundred and thirty bushels, and no less. The cultivation of this oats was in the usual way, without fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

FLAX.

The State of Ohio, Trumbull County, ss.:

Emory Dillon, being duly sworn, says that he accurately measured the land upon which Leroy Fuller raised a crop of flax the past season, and the quantity of land is two acres, and no more.

EMORY DILLON.

Sworn to before me, this 4th day of November, A.D. 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

Leroy Fuller, being duly sworn, says he raised a crop of flax the past season, upon the ground measured by Emory Dillon, and that the quantity of flax seed raised thereon was twenty-five bushels and one pound, and no less, by weight; and the statements in regard to the manner of cultivation are correct, to the best of my knowledge.

LEROY FULLER.

Sworn to before me, this 4th day of November, A.D. 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

Cost of Cultivation—Two Acres Old Pasture.

March	30.	1 day's plowing	$2 50
April	3.	½ day's plowing	1 25
	22.	1½ bushels seed	2 25
	23.	1 day's sowing and harrowing	2 50
	24.	½ day's harrowing	1 25
August	10.	½ day's mowing	62
	12.	¾ day's mowing	93
	16–17.	1½ day's threshing	3 00
	19.	½ day's cleaning seed	1 00
		Total	$15 30

The State of Ohio, Trumbull County, ss.:

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of flax the past season, and the quantity of land is two acres, and no more.

DAVID CALDWELL.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

John N. McCombs, being duly sworn, says that he raised a crop of flax the past season, upon the ground measured by David Caldwell, and that the quantity of flax raised thereon was thirty bushels, and no less. The cultivation of this flax was in the usual way, without fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this 1st day of November, A.D. 1878.

W. H. MCMURRAY, *Justice of the Peace.*

At a meeting of the directors of the Trumbull County Agricultural Society, the following premiums were awarded on crops:

Corn.

1st, E. Alderman, Fowler	$10 00
2d, H. C. Fuller, Braceville	5 00

Oats.

1st, H. C. Fuller, Braceville	$10 00
2d, John N. McCombs, Champion	5 00

Flax.

1st, Leroy Fuller, Warren	$10 00
2d, John N. McCombs, Champion	5 00

Potatoes.

1st, H. C. Fuller, Braceville	$10 00
2d, H. C. Fuller, Braceville	5 00

FLAX.

The State of Ohio, Trumbull County, ss.

David Caldwell, being duly sworn, says that he accurately measured the land upon which John N. McCombs raised a crop of flax the past season, and the quantity of land is two acres and no more.

DAVID CALDWELL.

Sworn to and subscribed before me, at Champion, this first day of November, 1878.

W. H. MCMURRAY, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.

John N. McCombs, being duly sworn, says that he raised a crop of flax the past season upon the ground measured by David Caldwell, and the quantity of flax raised thereon was twenty-six bushels and no less. The cultivation of this flax was in the usual way, without fertilizer or manure.

JOHN N. MCCOMBS.

Sworn to and subscribed before me, at Champion, this first aay of November, 1878.

W. H. MCMURRAY, *Justice of the Peace.*

POTATOES.

H. C. Fuller makes the following statement of the cost of cultivating a crop of potatoes on one-half acre. Planted two years in sucession in potatoes:

1878.

May	1.	To 15 loads of manure, at 50c. per load	$7 50
	1.	To 1 day's plowing, at $2.50 per day	2 50
	3.	To ½ day's harrowing, at $2 50 per day	1 25
	18.	To ¼ day's harrowing and marking, at $2.50 per day	62
	18.	To 3 bushels of seed, at 30c. per bushel	90
	18.	To ⅔ day's planting, at 90c. per day	60
June	3.	To ½ day's cultivating, at $2.50 per day	1 25
	3.	To ½ day's hoeing, at 90c. per day	45
	19.	To ½ day's cultivating, at $2.50 per day	1 25
	19.	To ½ day's hoeing, at 90c. per day	45
July	12.	To ½ day's plowing, at $2 50 per day	1 25
	12.	To ½ day's hoeing, at 90c. per day	45
October	5.	To 2 days' digging potatoes, at 90c. per day	1 80
	7.	To ½ day's digging potatoes, at 90c. per day	45
			$20 72

The State of Ohio, Trumbull County, ss.

John Fuller, being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of potatoes the past season, and the quantity of land is one-half acre and no more. JOHN FULLER.

Sworn to before me this 1st day of November, 1878.

J. A. BLACKBURN, *Justice of the Peace.*

The State of Ohio, Trumbull County, ss.:

H. C. Fuller, being duly sworn, says that he raised a crop of potatoes the past season upon the ground measured by John Fuller, and the quantity of potatoes raised thereon was eighty-five bushels and no less, measured in a sealed measure, and the statements in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me this 4th day of November, 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

Potato crop of one-half acre, by H. C. Fuller. This field has been planted two year in succession in potatoes:

1878.

May	2.	To 15 loads of manure, at 50c. per load	$7 50
	2.	To 1 day's plowing, at $2.50 per day	2 50
	4.	To ½ day's harrowing, at $2.50 per day	1 25
	20.	To ¼ day's harrowing and marking, at $2 50 per day	62
	20.	To 3 bushels of seed, at 30c. per bushel	90
	20.	To ⅔ day's planting, at 90c. per day	60
June	4.	To ½ day's cultivating, at $2.50 per day	1 25
	4.	To ½ day's hoeing, at 90c. per day	45
	20.	To ½ day's cultivating, at $2.50 per day	1 25
	20.	To ½ day's hoeing, at 90 cents per day	45

July	13.	To ½ day's plowing potatoes, at $2.50 per day	$1 25
	13.	To ½ day's hoeing, at 90c. per day	45
Oct.	11.	To 2 days' digging potatoes, at 90c. per day	1 80
	12.	To ½ day's digging potatoes, at 90c. per day	45
			$20 72

The State of Ohio, Trumbull County, ss.

John Fuller, being duly sworn, says that he accurately measured the land upon which H. C. Fuller raised a crop of potatoes the past season, and the quantity of land is one-half acre and no more.

JOHN FULLER.

Sworn to before me and subscribed in my presence, this 1st day of November, 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

State of Ohio, Trumbull County, ss.

H. C. Fuller, being duly sworn, says that he raised a crop of potatoes the past season upon the ground measured by John Fuller, and the quantity of potatoes raised thereon was seventy-five bushels and no less, measured in a sealed measure, and the statements in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

H. C. FULLER.

Sworn to before me and subscribed in my presence, this 4th day of November. 1878.

JAMES A. BLACKBURN, *Justice of the Peace.*

DISEASES OF CATTLE.

AN ADDRESS BEFORE THE SHORTHORN CONVENTION, JANUARY 7, 1878.

BY PROFESSOR N. S. TOWNSHEND.

Mr. President: If I were as well known to all the gentlemen present as I am to yourself, it would not be necessary for me to say a word by way of preface. But to prevent any possible misunderstanding, I wish to say, at the outset, that, strictly speaking, I am not a *Veterinarian*. This, however, is true, my early life was largely spent among animals, and I had many opportunities of observing their various ailments. Subsequently, when a practicing physician, I never hesitated to render medical or surgical assistance to animals when my services were desired. And now, without pretending to be an authority on such subjects, I take pleasure in describing to you some of the cattle diseases that have come under my notice.

Last year the Secretary of State requested me to prepare a paper on the losses sustained in Ohio from animal diseases. I was compelled to say that I knew nothing certainly of the amount of loss actually resulting from such cause, and suggested that certain questions be printed on the assessors' blanks, the answers to which would put us in possession of some facts. This suggestion was acted upon, and from the returns obtained it appears that the losses resulting from diseases of animals for the year previous amounted to $2,511,049. The total value of the live stock of the State is assessed at $73,131,110; but if, as it is generally supposed, this assessment does not exceed two-thirds of the actual value, then the real worth of our live stock is $117,156,676, and on the same ratio our losses for the year amount to $3,766,573, or about three and a fourth per cent. of the total value. The losses sustained from diseases of horned cattle were only one and one-tenth per cent. of their value; the losses from disease of horses was two per cent., of sheep one and three-fourths per cent., and from diseases of swine twenty-four per cent. Although the reported loss to the owners of cattle is less than from any other kind of stock, it amounted to the sum of $280,000, and this sum increased to what would represent the actual value amounts for the year to $420,000, which is a heavy tax on the profits of cattle owners, and a sum large enough to demand our attention.

Now permit me to refer to some of the diseases of cattle which may, in part, have occasioned this loss. In the dairy region of the north-eastern part of the Sta'e severe losses are occasionally sustained from *abortion*, or loss of the calf, before the natural period of gestation is completed. Such cases fall into two classes—sporadic or accidental, epizootic or contagious. Accidental cases are brought on by violence, by sudden fright, by drinking too freely of ice-cold water, or from eating unusual quantities of grain or other kinds of food that occasion indigestion and colic. Some suspect, I think without sufficient foundation, that the smut upon corn produces abortion; others, and probably with better reason, think it may sometimes be caused by the ergot, which, in wet seasons, is found upon hay. From whatever cause the disturbance comes, the cow manifests uneasiness, or perhaps gives evidence of pain, and she will probably have a mucous or bloody discharge from the vagina. Such symptoms during gestation are almost conclusive evidence of an approaching abortion. When this affection becomes contagious in any locality, no special cause other than contagion need be sought for; but, whether contagious or accidental, the symptoms and results are substantially the same. In treating these cases the sick animal should be thoroughly isolated, and should be made as quiet and comfortable as possible; and if there is an appearance of pain an ounce of laudanum may be administered. The laudanum may be mixed with water or milk, and given by the mouth, but it is better to introduce it by means of a syringe into the rectum; if necessary it may be repeated once or twice in twenty-four hours.

The President: What has been the success of this treatment in epizootic cases?

Dr. Townshend: When the disease has become contagious it will be necessary to add vigorous means of disinfection, fumigation with burning sulphur, or tar, or free sprinkling of dilute carbolic acid. Such measures, so far as I have had opportuities of observing, have been sufficient to arrest the malady.

Mr. Stevens: Do you know anything of the virtue of hempseed as a preventive of abortion?

Dr. Townshend: I do not An extract prepared from the tops of the hemp plant (Canabis Indica) may be found in the drug stores. This is a powerful narcotic, and would promptly allay pain, but I am not aware that it has been employed in such cases. The seed of the American hemp (Canabis sativa) is not supposed to have much medicinal power.

Mr. Gregg: Is the separation of the cow from her fellows intended for her own benefit or to prevent contagion?

Dr. Townshend: In an obviously accidental case it would be for the benefit of the cow herself, to secure for her quiet and noninterference, but the peculiar sympathy of all animals in this condition would render isolation desirable in behalf of animals not affected.

A Member: Is abortion liable to be fatal to cows?

Dr. Townshend: Not often; the principal evil of abortion is the loss of the calf; the cow, after abortion, does not milk as well as after parturition at full term, and she does not so certainly come with calf again.

Another serious and often fatal disease among cows is what is sometimes called "falling after calving." Of this there are two or three distinct forms; in reality they are different diseases. First, there is what is known to veterinarians as Parturient Apoplexy. This occurs almost immediately after calving, and especially affects good milkers, and cows that are too fleshy. It is characterized by insensibility and helplessness, and is frequently followed by death in a day or two. Another kind of falling manifests itself two or three days after calving, or when the full flow of milk is expected, therefore it is sometimes called Milk Fever. It commences as inflammation of the uterus, but the inflammation rapidly extends to the peritoneum or inner lining of the cavity of the abdomen—veterinarians usually call this Peritonitis, or, sometimes, Parturient Fever. A third form of disease may come on a week or two after calving, and is caused by the absorption of putrescent matters which were not properly discharged; this is known as Septic Fever. These different diseases, or different forms of disease, are all connected with calving, but they will be readily distinguished. As might be supposed, they require very different modes of treatment. For the first named or Parturient Apoplexy, it is especially true that prevention is the best treatment. It is most likely to occur with cows that have had two or three calves before, and as I have already said, are great milkers or in full flesh. This will suggest especial watchfulness of such, and will prompt to the moderation of their feed, and to the use of small doses of salts for a short time before calving is expected. If, in spite of care, or for the want of it, a cow is attacked in this way, it may be expedient to bleed in the first instance, to relieve congestion of the brain; then, to excite the heart's action, a stimulant, such as whisky or ammonia, may be required, and this should be followed by an active and stimulating cathartic, such as aloes, or castor oil, with croton oil in combination. In cases of Peritonitis, attended with pain and bloating, the chief reliance is upon repeated doses of castor oil and spirits of turpentine. Sometimes laudanum is needed where the pain appears to be severe. Fortunately this treatment is frequently successful. In septic fever the treatment is anti-septic and supporting. Hyposulphite of soda is given with the drink, and small quantities of carbolic acid, in warm water, is injected into the vagina. At the same time the food should be both nutritious and digestible. Sometimes tonics, such as gentian, and sulphate of iron may be needed before the cow will fully recover.

Retention of the membranes, or "failure to cleanse," as it is sometimes called, may occasion the Septic Fever just referred to, or it may simply produce an unthrifty condition. Every farmer feels the importance of having the membranes which envelop the calf properly removed in a short time after a cow has calved. The uterus of a cow does not contract fully for two or three days, so that if the membranes are retained, there is usually but little difficulty in removing them by the hand within that period. Frequently, however, this is not necessary, for the object may be more easily secured by the prompt administration of one or two doses of medicine. I have generally used half a pound of Glauber's salts dissolved in a quart or more of warm tansy tea, or an infusion of the tops of the branches of savin. A single dose is usually sufficient, but if not, a second will be likely to have the desired effect, if given during the first day or two.

Mr. Baker: Did you ever give the oil of savin?

Dr. Townshend: I have not used the essential oils of savin or of tansy, although I know they would prove quite as effectual as the infusion, but they do not mix quite so conveniently with salts; they would, however, mix very well with castor oil.

Mr. Baker: I always use the oil of savin, and I never knew it to miss. I would also like to ask the Doctor if he thinks it safe to give cold water to a cow that has just calved?

Dr. Townshend: When I have given a dose of salts and tansy to hasten cleansing, I have been particular to have it quite warm. I think a large proportion of the cases of peritoneal inflammation, as already stated, are occasioned by too early access to cold water.

Eversion of the vagina and uterus sometimes occur with cows. The former, or eversion of the vagina, is a simple affair, usually the result of weakness. The eversion of the whole uterus is much more serious, and may prove fatal. The best milker I ever owned calved at full term and without difficulty; an hour or two after, probably in the effort to cleanse, she everted the whole uterus. Before she was seen again only a short time had passed, but the accident in the mean time had happened, and she was found quite dead. The eversion of the vagina, when the protrusion is perhaps near the size of a hat, may easily be restored by placing the doubled fist in the center of the mass and using gentle but steady pressure until the whole returns. The chief difficulty is in securing its retention. Some seek to accomplish the result by compelling the cow to stand in a stall where the floor or bedding is considerably higher behind than before. If this is not sufficient, a rope truss is employed by some persons, which is easily enough applied, but not very easy to describe. Others resort to a couple of stitches with a sacking needle and oiled ribbon across the vulva or external opening. This is an old practice, and of course is effectual. The eversion of the uterus is more difficult to replace, as the large mass may reach down to the hocks. Before restoration is attempted it may need to be cleansed with warm water; then it must be raised by one or two assistants and gradually returned. After replacement the measures already described may be employed to prevent a re-expulsion.

Mr. Brown: I recollect that years ago my father made use of a red pepper wash with good success.

Dr. Townshend: I have had no experience of the use of red peppei in such cases. In general I have made no application except for the purpose of cleansing the parts. In a single instance, where there was considerable bleeding, I used a solution of alum with a good result.

Inflammation of the udder is a troublesome and painful affection to which cows are liable. This is usually a simple form of inflammation, and is readily overcome by frequent and careful milking, a little cooling physic, and repeated washings of the inflamed part with cold water. Greasy applications and hot fomentations are not nearly so good as cooling treatment, and their persistent use may result in the loss of the inflamed quarter. Last summer I saw a cow in whose case the inflammation had gone on to gangrene, and the whole bag appeared to be sloughing off.

Mr. Brown: I think I can say that I saved a cow that was the subject of a severe inflammation of the udder, by the use of the milking tubes. Without the instrument it seemed impossible to relieve the distended bag; by its use no difficulty was experienced.

Dr. Townshend: The milking tubes in such cases are extremely convenient, and they evidently occasion much less pain than the usual mode of milking. When a tube was not at hand, I have frequently seen a quill prepared and used instead. Fistulous openings in the sides of the teats are occasionally met with. In any effort to close them up the milking tube again comes into use. It must be introduced and retained in the teat with sticking plaster or other means. The edges of the side openings are scarified and brought together by a fine silk thread, and in a short time the superfluous opening will be effectually closed.

Mr. President, I am aware that I have referred to only a few of the many diseases that affect our herds. Several diseases more serious than some I have mentioned have been entirely omitted to-day. On some of them, such as tuberculosis, Texas fever, etc., I have papers in our State Agricultural Reports, to which I beg to refer those who are specially interested in those topics.

[The following article on "Losses occasioned by diseases of domestic animals" is the one referred to by Prof. Townshend as having been prepared for the report of the Secretary of State.—FLEMING.]

LOSSES OCCASIONED BY DISEASES OF DOMESTIC ANIMALS.

BY PROF. N. S. TOWNSHEND.

The following paper on the losses occasioned by diseases of domestic animals is an attempt to answer three questions. Why do so many domestic animals become sick? Why do so many sick animals die? And what may be done to diminish such losses?

In accordance with statistical requirements for current year, all stock-owners at the time of the annual assessment were required to report the number and value of all horses, cattle, sheep, and swine, lost by disease during the year preceding. In obedience to this requirement the following losses were reported: Horses, 11,047, valued at $747,213; cattle, 16,420, valued at $280,047; sheep, 59,126, valued at $148,700, and hogs, 306,349, valued at $1,331,655. An aggregate loss exclusive of mules which were not reported of $2,511,049, this is near two per cent. of the assessed value of all the horses, one and a quarter per cent of the cattle, one and three-quarters per cent. of the sheep, and over twenty-four per cent. of the value of the swine. If it be true, as is sometimes stated, that live-stock in this State are assessed at not more than two-thirds of their actual value, then the live-stock of the State assessed at $73,131,116, is actually worth $117,156,674, and in the same ratio, the losses during the year amounted to $3,766,573. Since the losses sustained by owners of horses, cattle, and sheep, were less than two per cent. of the value of these animals, it is safe to infer, that they have suffered from no epizootic, and that hogs only have been subject to unusual mortality.

WHY DO SO MANY DOMESTIC ANIMALS BECOME SICK?

Domestic animals are subjected to unnatural conditions, as well as to much hard treatment; to these causes may be attributed much of their sickness. Horses are driven hard when the weather is extremely cold; the necessarily increased amount of cold air taken into the lungs, may of itself, be enough to produce diseases. After hard driving, horses are often allowed to stand only partially protected, or wholly unprotected from the cold; the result is likely to be inflammation of the lungs, or some other disease of the respiratory organs. Horses are frequently kept fasting too long, then they are over fed or otherwise fed improperly, and hence colic, indigestion, or inflammation of the stomach or bowels. Then, what innumerable lamenesses come from over driving, over-work, or unskillful shoeing. A valuable cow in full flesh may bring a calf, and be allowed soon after to drink at a brook or spring; drinking freely of cold water at such a time may cause a chill, and this be followed by Parturient Fever and death in a few days. The owner attributes the fever to septic absorption; this may be true, but it may be equally true that one or two pails full of water of moderate temperature would have prevented the loss. Sheep are sometimes shorn while the nights are too cold, although the days may be warm enough, and many take pleurisy or inflammation of the lungs in consequence. In 1866, a succession of cold storms about shearing time destroyed a great many thousand sheep in Ohio, almost all of which might have been saved if shearing had been delayed, or sufficient shelter and protection had been afforded. The contagion of hog cholera is believed by many to be generated in the intestinal canal, and to be propagated by the evacuations of diseased animals; yet how few farmers take pains to secure clean quarters for their swine, even after Hog Cholera has made its appearance. How entirely the natural instincts and mode of life of the hog are changed when his rooting is stopped and he is fed exclusively on corn, and converted into a lard and pork factory.

Much sickness among animals, and loss to owners has heretofore occurred in Ohio from the spread of contagious diseases, owing to the deficiency of proper sanitary legislation. Only at the last session of the General Assembly was an act passed to prevent the spread of Texas fever; a year before, a Columbus butcher hired cattle pastured a few miles from the city; at the appointed time the cattle were brought to the city and slaughtered for beef, and, probably, no one suspected that they could spread disease. But when the farmer on whose land these cattle were pastured, afterwards turned his own cattle upon the same pasture, he soon lost sixty good steers from Texas fever. Since 1857, there has been upon the statute book a law to prevent the spread of Foot-Rot among the flocks of Ohio; before that time the value of sheep was often seriously reduced by this disease. The Epizootic Influenza that destroyed or affected so many horses in 1872 and 1873, was not prevented or restrained by sanitary legislation. A year or two since, there was an investigation of Hog Cholera, but it led to no action. In this State we have no commission existing whose duty it is to inquire promptly into the facts of any epizootic outbreak, with authority, after allowing full or partial compensation to the owner, to destroy all animals liable to spread the contagion. Such provision has been made by several European governments and is found to be good economy.

WHY DO SO MANY SICK ANIMALS DIE?

Because sick animals in Ohio receive little appropriate medical or surgical treatment. Whatever the disease, many sick animals receive absolutely no treatment; the owner does not understand the disease, does not know what to do, and, perhaps wisely, does nothing. In another case, the owner of a sick animal consults all his neighbors, and finally resolves on something, after the opportunity of arresting the disease at its outset by a timely remedy has already passed, not realizing that late treatment is, practically, no treatment. Still worse is the treatment some animals receive. A man, for example, has a sick cow; one neighbor calls the disease "loss of cud;" another thinks it is "hollow horn;" and a third believes it is "worm in the tail,"—for those imaginary diseases every kind of nostrum is recommended. If the cow dies, no thorough examination is made to find out what the disease really was; each neighbor adheres to his original opinion, and nothing is learned for the management of similar cases in future. It may be that an animal is known to have some form of disease; the owner of the animal is also the owner of a work on veterinary medicine, but, unfortunately, he may not be accustomed to examine the pulse, has no means to ascertain the temperature, and no skill in judging of the stage of the disease, or of the condition of his patient. He gives what his book advises, and what would be the right thing in a particular stage of the disease, but which at another stage may be the worst thing possible. One difference between an intelligent veterinarian and a person who is not intelligent on the subject of disease, is this: the former prescribes for the condition of his patient, irrespective of the name of the disease, while the latter prescribes for the disease by name, irrespective of the condition. Some farmers make the mistake of supposing that all the veterinary help they require can be obtained from the columns of a newspaper; but unless a disease is trivial, or has become chronic, too much time is likely to be lost before this method can be made available. Few farmers can so describe a case that a veterinarian can obtain a correct idea of the actual condition of an animal, or if that were done, there is no assurance that the condition will remain unchanged until a prescription finally appears in another number of the paper. No doubt much valuable information on veterinary topics is given through agricultural papers, but this is rather applicable to future than to present cases. If a farmer's wife or child were taken sick, he would not sit down and describe the case to the editor of his weekly paper, and expect the editor to refer the matter to a doctor, who, without compensation, is to return a prescription to the editor, which, with the whole correspondence, may appear in the next weekly issue. The plan of taking an agricultural paper, at one or two dollars a year, with the expectation of having veterinary prescriptions into the bargain, has an aspect of folly and stinginess that will not bear inspection.

HOW MAY SUCH LOSSES BE DIMINISHED?

By the prompt employment of skillful Veterinarians, wherever such can be found; a skillful and not expensive operation may save the life of a valuable animal, so a timely dose of medicine may prevent serious illness and loss of life. The ordinary operations that all farmers make, or procure made, are often so unskillfully managed that the losses within the State, in a single year, would afford a good living for ten times our present number of competent veterinarians. Perhaps it will be said that we have but few competent veterinarians within the State, and that the employment of such as we have is uncertain, and often unsatisfactory. If this be true, it is much to be regretted that stock owners in Ohio are doing so little to secure a better state of things. On the 30th day of September last, the American Veterinary College, at 141 West Fifty-fourth street, New York, opened its fourth annual session; the class was gathered from nine States, and the West Indies, but not one student was credited to Ohio. On the 1st of October the veterinary college in Montreal opened its annual session. Seven of our States were represented in the class, but Ohio was not among them. A similar school in Toronto began its winter course about the same time; of its class no report has been received. Is it not remakable that Ohio, with domestic animals assessed at $78,000,000, and actually worth one-third more, or $117,000,000, and sustaining annually a reported loss of more than 3½ per cent. on the whole amount, should exhibit such lack of interest? Well educated and accomplished veterinarians ought to find appreciation and plenty of encouragement in Ohio; such men are needed, not only to treat disease, but to investigate its hidden sources, and to devise better sanitary as well as curative management. Many diseases are already better understood than formerly, but there are others which need more careful investigation.

A better knowledge of the anatomy and physiology of animals on the part of intelligent and enterprising farmers would greatly diminish our losses; not by enabling them to dispense with the services of veterinarians, but by suggesting successful measures for preventing disease. Sanitary science, or the science of preserving health, is as applicable to animals, as to human beings; what relates to the proper drainage of land, the sewerage and ventilation of buildings, pure water, good food, and proper management, if thoroughly understood, would soon tell upon the health of our animals and upon the resources and prosperity of the State. The Ohio State University already gives a good share of attention to such subjects; it remains, perhaps, to be seen how far such teaching will be appreciated.

Many losses might be avoided if all stock owners would constantly keep on hand a few effective remedies, and a few needful instruments to meet promptly the emergencies that will arise. Just as a prudent mother will keep castor oil, hive syrup, and paragoric, or their equivalents; so a prudent farmer should never be without Glauber's salts, saltpetre, tartar emetic, laudanum, and spirits of turpentine. Of instruments, he should have a drenching horn, or long-necked bottle, a surgeon's needle, and silk, a fleam or lancet, a trocar and canula. It would not be difficult for any man, or woman, of good common sense, to learn when, and how, to use some of these things, and so avoid loss, especially that most serious loss, the loss of time.

The most serious losses reported for the year, have been occasioned by Hog Cholera; the counties of Clinton, Fayette, Franklin, Pickaway, Preble, and Ross, have each lost upwards of ten thousand head of swine; in the counties of Butler, Warren, Darke, and Greene, the loss was near but below that number. It may be difficult for farmers in these counties to change at once the form of farming for which their soil is so well adapted, but to some extent it would seem to be the part of prudence to rely less on the production of their great staples, corn and pork, and to turn their attention to other crops less subject to uncertainty and disappointment.

With the hope of stimulating others to observation and experiment, a disagreeable visit, recently made by Hog Cholera to the University farm, will be reported. Eighty hogs of all sizes were upon the farm, when, on the 19th of October, one was observed to have a cough; this hog was immediately isolated, and what was thought to be appropriate treatment given. On the 25th of the month, after a cold night, this hog was found dead, and also another of the lot from which the sick one had been taken. These hogs were carefully examined, and it was established beyond doubt that both had died of the disease known as Hog Cholera. At this time several other hogs showed unmistakable evidence of having the disease. The whole herd was at once removed into new quarters, and separated into several parcels; twenty-one large hogs were yarded by means of a moveable fence upon a clover field, and a comfortable shelter was provided for them; these hogs, with their shelter, were moved every day since by changing a part of the fence; another lot of ten smaller hogs were treated in the same manner upon the same clover field, except that they were not so well provided with shelter. Six large hogs, similar to the lot of twenty-one, appeared to be very sick, and were put under good cover with a small yard, and were not moved afterward. Two lots of small shoats and pigs were provided with fresh quarters, but have not been changed from day to day. Hyposulphite of soda was then obtained, and dissolved in all the drink, with which all the hogs were supplied at the rate of one-fourth to one-third of an ounce to every hog or pig, and this quantity was given three times a day. None of the hogs were allowed access to the brook running through the farm and through their former yards, under the impression that this brook might have brought the contagion, Hog Cholera having prevailed higher up stream. The food of all the hogs was changed wholly, or in part, from corn, to pumpkins; turnips were also given, but not eaten, except they were cooked. Two hogs died the day after they were moved, and several since. The result at this date, November 25th, one month from the time they began to die, is as follows: The twenty-one large hogs have all passed safely through the disease; they had cough, constipation, dark colored evacuations, and diarrhœa; all have now recovered, have a good appetite, and are again eating their full ration of corn. Of the ten smaller hogs put on the clover field, and moved daily in the same manner as the larger hogs, four have died, and all of them of inflammation of the lungs, or pleurisy, after passing through and apparently recovering from the inflammation of the bowels. Of the six large hogs that were the sickest, one died the day after moving, the remaining five are now well. Several of the pigs and shoats passed through the bowel trouble, but continued to cough; to relieve the bad condition of their lungs, tar was used, a tablespoonful for half a dozen hogs, was put into a pail, and boiling water poured upon it; when the tar was partially dissolved, the whole was poured into water or slops, with which the pigs were supplied. To the larger lot of shoats, tar was given as well as the hyposulphite; two have since died; to a smaller lot tar was not given, and seven have died. All told, in a month from the first loss, five hogs have died, and thirteen pigs and shoats, with a probability that two or three others which continue to cough will be added to the number. Every one that died was carefully examined; the whole number of Hog Cholera cases thus examined by the writer, within four or five years, considerably exceeds one hundred.

We will now give in detail the conclusions drawn from this experience. The first point which appeared to be established is that the infection of Hog Cholera may be carried by a stream from an infected region above to farms below. Unless this be true we can not explain the appearance of the disease on the University farm. Acting on this conviction, all the hogs were removed from yards through which the stream ran; and without shutting the hogs from the brook they could not have been induced to take the articles we desired to give in their drink.

The removal to fresh quarters from where the disease was first manifested, and to a fresh place by day, was resorted to, from the conviction that this disease bears a close analogy to Typhoid Fever of the human subject. The contagion of Typhoid is probably generated in the bowels of the diseased, and is communicated through the evacuations to the healthy. The contagion of hog-cholera, whether it be analogous to a ferment, or consists of parasitic organisms, carries with it the power of reproducing its like, and whether communicated by direct contact, through the atmosphere, or by a stream, or by all of these, it would seem to be wise to remove animals from all places already reached by the infection. By daily changes from place to place, the twenty-one large hogs thus managed had a clean place every day; their pen was made by a portable fence, and its daily change was but little trouble, and at the same time a comfortable shanty, in which they slept and sheltered, was moved with them. This daily change was probably less important than other features of the treatment, for, of the ten smaller hogs which had the same daily change, but without shelter, four died; while, of the six hogs supposed to be sickest, five recovered without removal; they had, however, the best floor, and most comfortable place for sleeping.

Food.—A diet of corn exclusively is, doubtless, very fattening to healthy hogs, but in the sick it excites a high grade of fever, and the more fever the more local inflammation, and the greater the danger. Potatoes, beets, and pumpkins are better than corn for sick hogs, but a fluid diet is best of all; milk, sweet or sour, is the best food; or, if it were convenient to make a soup from butcher's offals, this would equally well replace the nitrogen consumed in the course of the disease. In Typhoid of the human subject, milk and beef tea constitute the diet, to the exclusion of solid food.

Shelter and Warmth.—All of the hogs to whose death reference has been made, died during the coldest nights. Where the lungs are infiltrated with serum, or solidified like flesh, as they are in many cases in Hog-Cholera, the respiration is proportionably impaired, and the production of animal heat almost impossible; then, warmth is life, and cold is death. If hogs are kept sufficiently warm, and the lungs are not too much affected, some will recover, but if subjected to any exposure such will die. Cold water from a creek or spring often abstracts more heat than can be afforded, hence, in warm drink and food there is much less danger. In cold weather, a good shelter, with plank floor and plenty of litter, will greatly favor the recovery of affected animals.

Hyposulphite of soda was given as a disinfectant or anti-zymotic (opposed to fermentation); it was chosen instead of the sulphite, or bi-sulphite of soda, because it is much less expensive, and less disagreeable to the taste. If dissolved in sufficient liquid it will be taken voluntarily, where hogs are deprived of other drink. It dissolves equally well in water or milk; the latter most effectually conceals the taste. Besides its action as an anti-zymotic, it is laxative and cooling, and therefore fills more than one important indication. It did not at once arrest the disease, but it appeared to moderate the fever of the early stages, and lessen the danger from inflammation and ulceration of the bowels. Ulceration, so frequently found in the cœcum and large intestines, and sometimes in the small, was not found in any of these hogs that took the hyposulphite from the beginning of the attack. In later stages of the disease it did not relieve the cough, or bad breathing, when these depended on inflammation of the lungs, pleurisy, pericarditis, or pulmonary infiltration, the hyposulphite was continued through the month, at the rate of an ounce, or nearly an ounce, a day for each hog—those that took most drink took most medicine.

Tar was given when the disease had become chronic, and the cough was particularly troublesome. It was selected in preference to other articles, because it is cheap, usually at hand, and when sufficiently diluted and mixed with the drink, will be taken voluntarily. It is a good disinfectant, stimulating expectorant, and diuretic, and, therefore, filled several obvious indications. In some cases it gave considerable relief, and more than justified the trouble of its administration; but it did not control the inflammation of the lungs.

Other Remedies.—To the hog first sick, after complete isolation, sulphur was administered in laxative doses. Afterwards, the difficulty of breathing and thumps were so troublesome that tartarized antimony was given—ten grains daily for four days. The difficulty of breathing was so much diminished that recovery was expected, but after a very cold night this hog was found dead; on examination, more ulcerations were found in the cœcum and ileum in this case than in any that died subsequently. Castor oil and calomel were given in a case where the constipation was a marked symptom; these had the expected effect of producing free evacuations, but did not abate the inflammation of the bowels, of which the animal subsequently died. Sulphate of soda (Glauber's salts) was also given as a cathartic to several that suffered most from constipation; it had no decided advantage over flowers of sulphur, which the hog will take without objections, if mixed with his food or drink. There is, however, no difficulty in giving medicine in liquid form to a tolerably quiet hog; the loop of a small cord is slipped into the mouth, and the snout gently lifted up, then the hog will swallow a pint or more of liquid from a bottle without difficulty, but harshness and force only do harm.

Finally, it seemed to be proven, that the mortality from Hog-Cholera may be greatly diminished by careful, humane, and intelligent treatment. Other measures may be more efficacious than those adopted on the University farm. We had, however, the satisfaction of getting through with the disease with the loss of less than a fourth of the animals affected, and much less than a fourth of the value of the herd. No specific has been discovered, and we doubt if one ever will be; our success was not what we wished, though the result has been more favorable than we feared. It is something to say, that we are not discouraged, but are persuaded that we might profit by some mistakes, and secure a still better result, if ever compelled to make the trial again.

ESSAY ON DRAINAGE.

Based on actual experience, giving an account of the products of the land before and after drainage, etc. By S. J. WOOLLEY.

The following report of drainage operations on my farm is respectfully submitted to the consideration of the Board:

The farm referred to is located in Brown township, in the northwestern part of Franklin county, and belongs to the table-land of the Scioto valley. The surface is nearly flat, two-thirds being swale, and covered by water nearly half the year, with a subsoil of tough black or blue clay. The remaining third was drier, the soil a calcareous clay, but quite stiff. The wet land was timbered with elm, water-ash, swamp-oak, soft maple, etc., the drier land with white-oak, red-oak, hickory, walnut, hard maple, and beech.

Preparatory to the drainage of the farm, a ditch a mile and one-half in length was dug from the nearest creek for an outlet. Draining tiles were not then made in this part of the country, so that underdrains were, from necessity, made with wood. The drains were dug twelve inches wide, and from fifteen to twenty-four inches deep, this depth being considered sufficient at that time. In the open drain a flat rail was placed on its edge against the bank on one side, and pieces of timber, fifteen inches long, and as wide as could be split, were placed one end on the rail and the other on the bottom of the ditch on the opposite side, making a three-cornered space for the water after the whole was covered. Several hundred rods of drains of this description were made, but in a few years it was found that musk-rats, and perhaps Norway rats, were filling them up. For want of better material, and especially for want of a deeper outlet, which necessitated the drains being laid so shallow, this first experiment was unsatisfactory, though not discouraging.

After a time a tile factory was started in the neighborhood, and finally a deeper outlet was secured, so that underdraining could be prosecuted with better prospects, consequently the work has gone on until nearly fifteen miles of underdrains have been put down on the farm in the places where it was supposed they would do the most good.

The methods pursued in the construction of these drains will now be stated, with the conclusions reached after this experience.

The distance between drains must be determined by the nature of the soil, their depth, and the amount of fall. A loose, porous soil will permit water to reach the drains for a long distance, while a tough, compact clay is almost impervious to water, and requires the drains to be made much nearer. In a black, mucky, loose soil, drains of sufficient depth will drain off most of the surplus water at a distance of eight or ten rods apart. If the land is clay, less than half that distance will be likely to prove more satisfactory.

But few persons in this part of the country realize the benefit of deep drains, and hence a depth of from two to three feet is usual. The time is probably not far distant when such shallow drains will be taken up and put down again at greater depth. The deeper the drains are, the less frequently will they be required. A depth of from three to four feet should, if possible, be secured, and most people will be inclined to be satisfied with this rather than incur the expense of digging deeper.

The fall in a drain is not always a matter of choice, since it must frequently depend on the outlet. When a good outlet is secured, and a good fall for the whole length of a drain is obtainable, this may be taken into account in determining the size of the tile. A three-inch tile, with a fall of thirty-six inches in a hundred feet will discharge more water in a given time than a six-inch tile with a fall of only one inch to a hundred feet, or six times as much, with a fall of thirty-six inches to the hundred, as with a fall of one inch to the hundred. A fall of one inch in twenty feet will usually be enough to keep the channel clean, if the fall is uniform.

The proper direction of drains is a matter of much importance. In draining swales that meander along with numerous curves, the usual custom is to follow the lowest ground through all the curves, and consequently have a long drain to dig, more tiles to provide, and relatively less fall. Instead of this method, a straighter course, cutting off the corners, has the merit of requiring fewer tiles, and of securing a better fall, and consequently of permitting the use of smaller and less expensive tiles.

The laterals or side drains, as they enter the main drain, should be made to enter at an acute angle, pointing down stream. Experience shows that if their current enters square across that of the main drain, one or the other streams is liable to be arrested, and sand or gravel to be deposited to the injury of the water-course.

In any system of drainage, open ditches, especially such as may be trodden by cattle, are a great defect. They are liable to fill up; they use up a great deal of land; are a trap for sheep and the young of other animals, and interfere with cultivation and passage from one part of the farm to another; therefore, the fewer open ditches the better. How to make a main drain, which is to receive the drainage of many acres, and therefore needs a large calibre, is sometimes a difficult problem. In the draining operations here described, the main drains were made by laying a number of the largest sized tiles side by side, or a second course upon the lower. This method is simple and effectual; the objection to it is, that it is expensive. If six or eight six-inch tiles, costing sixty cents a rod, are laid together, the drain will cost several dollars per rod. In some localities, a low-priced sewer-pipe, without sockets or rings, and at one-fourth the market price of ordinary sewer-pipe, may be obtained. The calibre of pipes compare as the squares of their diameters, hence four three-inch tiles, $3 \times 3 \times 4 = 36$, are just equal to one six-inch tile, $6 \times 6 = 36$; four six-inch tiles, $6 \times 6 \times 4 = 144$, are the same as one twelve-inch tile, $12 \times 12 = 144$. Instead of using several parallel pieces of tile in the main drain or ditch before covering, a single sewer-pipe, without socket or ring, where obtainable at a fair price, would be preferable. For the want of such pipes, mains were made by placing several large tiles together.

In laying the tile and filling the ditch, some begin at one end, and some at the other. If the drain is to be short, and the sides are not likely to fall in, or if a main with several laterals has to be tiled, it is best to begin at the upper end to lay the tiles; by this method all sediment may be taken from the channel, and nothing finds lodgment in the tiles. But where lengthy drains are to be made, and there is sufficient fall, and especially if the weather be catching, it is more convenient to begin to dig at the mouth of the drain, lay the tiles, and complete the ditch as the work progresses upward. It is a great saving, especially in a deep drain, to tile from the lower end, because then much of the dirt requires to be moved but once. In draining tough clay land, the clay from the bottom of the ditch should not be thrown back first, but the more friable top soil, to facilitate the descent of the water.

There can now be no question in regard to the best form of tile. At first, the horse-shoe tile was made semi-circular in shape, and without a bottom. Next the sole tile, of the same shape as the horse-shoe, but having a flat bottom. Then came the pipe tile, which is circular, and has many advantages, among them the possibility of being laid true on the bottom, however it may be warped or crooked in burning.

The expense of underdraining is made up of three items: cost of tiles, digging the ditches, laying the tiles and filling up the ditches. The cost of tiles varies in different localities; a price list of the factory already referred to is as follows:

2 inch per rod	20 cents.
3 " "	25 "
4 " "	35 "
5 " "	45 "
6 " "	60 "
7 " "	80 "
8 " "	$1 00

Where a farmer is so situated that he can make his own tiles, or where several farmers can associate, a Grange, for example, it is probable that the cost of tiles may be brought much lower. A field of forty rods square, or ten acres, had four drains put across it from side to side; in these drains were laid four-inch tiles, costing, at 35 cents a rod, $56.00; the digging cost 20 cents a rod; laying the tiles and filling the ditch, 6 cents a rod; the total cost was $94.00 for draining the ten acres. Had two-inch tiles been laid in the upper thirds of these drains, three-inch in the middle thirds, and four-inch in the lower thirds, the cost for tiles would have been somewhat diminished, and the draining quite as good. If the digging had been done by an experienced ditcher, who would make his ditch at the bottom no wider than the tiles to be laid, the cost of this item might have been reduced.

A most important benefit resulting from underdraining on a large scale is the improvement in the healthiness of the region. Agues, so common when the country was new, are now comparatively rare. Even Consumption, it is said, becomes less frequent where underdraining has had the effect to diminish the humidity of the atmosphere.

Another benefit is the improvement of the herbage in pastures and meadows. Pasturage is richer on drained lands and more nourishing and fattening; it is also much less likely to induce disease. Wet meadows often produce little else than wild grass or swale hay, which is far inferior to that grown on good, sound, dry land.

Corn is one of the best crops to grow on swampy ground after it has been thoroughly drained. Before draining, a forty-acre field was planted in corn, and, after a great deal of labor, only eight bushels of inferior corn per acre were harvested. Since drainage, the same field has not failed to produce from sixty to eighty bushels per acre, and with much less labor of men and teams.

Wheat is usually a poor crop on wet land. A thirty-acre field on this farm was sown with wheat before draining; it was mostly winter-killed, and the part which was not winter-killed was destroyed by the rust.

Since, that field was drained it has produced large crops of superior wheat, and the crop has never since been affected by the rust.

Before drainage operations were commenced one field was planted with potatoes. The crop was heavy on the low land, but rains fell before the potatoes were dug and all rotted. On the dry land the potatoes were good, and did not rot. Since this field has been drained and made dry and mellow it has borne large crops of potatoes, and of the finest quality.

Another benefit resulting from drainage is the great improvement it makes in the texture of the soil. The subsoil of this farm was, much of it, a tough, sticky, blue clay, almost impossible to plow or work. Since it was drained the blue clay has become friable and loose, and easy to work, and has changed color, so that it is now a fine black loam. It plows and works easily through the entire season.

Drainage lengthens the season by fitting the land to be worked some weeks earlier in the spring. The drained land gets the full benefit of the frost, freezes deeply, but thaws out quickly, and, by its porous character, soon becomes dry enough to work.

The water from drains, if run into troughs, as it is on many farms in this State, affords the best of stock water. In the winter, it is not so cold as creek water, and therefore safer for stock. For culinary purposes it is much softer and freer from mineral matter than water from springs and wells.

Drainage is also a great saving of manure; on wet land this is washed off by surface flow, but on well-drained lands the water is promptly absorbed by the soil, carrying with it the manures placed on the surface, to find a lodgment in the soil; while only the pure water escapes by the drains. The free passage of water into the soil enables it to carry down the fertilizing elements it has taken from the atmosphere.

Perhaps it is only fair to mention one disadvantage that comes of drainage. If a swampy piece of woodland is suddenly drained most of the timber will probably die; the oaks and hickorys will go first. The change is first noticed in the tops of the trees. However, the young timber soon accommodates itself to the change, and after a time grows more thriftily than ever.

Such are some of the conclusions reached after faithful endeavors for more than twenty years to improve a tract of wet land by underdraining.

THE PART PLAYED BY NITROGEN AND ITS IMPORTANCE IN AGRICULTURE.

BY DR. J. KONIG.

[*Translated.*]

Nitrogen is by far the most important of all the chemical elements of nature. Its combinations with carbon, water, and oxygen are the real carriers of organic life; from the protoplasm of plant cells, from the corpuscles of the blood up to the most highly organized muscle and the substance of the brain, the functions of life are dependent upon the presence of complex combinations of nitrogen. When we consider that nitrogen in its combinations as ammonia, nitric acid, guano, etc., is the most important as well as most expensive of fertilizers for that source of all food—field soil; that for it millions of marks are expended yearly by farmers in Germany alone, that the natural sources of it—guano and Chili saltpeter—at some time, even if only after years, will undoubtedly be exhausted, the necessity for tracing the course which it takes in organic nature in order to find means by which its natural compounds may best be economized, will clearly be seen.

The surrounding atmosphere, to a height of ten miles, consists essentially of two gases—oxygen and nitrogen. It contains of the first, twenty; of the last, eighty per cent., by volume. Besides these, it holds varying quantities of steam and carbonic acid. To the existence of oxygen all processes of oxidation or combustion are due. When the atoms of an element (as iron or carbon) come in contact with oxygen, the temperature begins to rise, and when it has reached a certain height they are united with the phenomena of light. The act of combination, when the heat is sufficient to render the particles luminous, is styled in ordinary life, combustion; but this term may, in a particular sense, be applied to all processes by which oxygen unites with another element. Hence, it will be seen that the combination of oxygen with the particles of food in our blood, with the carbon and hydrogen of the blood and muscle substances, is nothing else than combustion which originates and maintains the so-called animal heat.

In all these processes the nitrogen of the air takes apparently no part. It was indeed for a long time the opinion that it was a perfectly passive gas, only present for the purpose of diluting the oxygen and moderating its action.

1. By a series of fine investigations, made by Schönbein in the fortieth decade, it was for the first time proved that free nitrogen was not so entirely inactive; that certain changes were constantly taking place in the atmosphere, by means of which it passed from a free to a combined state, and that, in this state, it united with the oxygen and water of the air, and formed, respectively, nitric acid and nitrate of ammonia.

If a spark of electricity be passed through a mixture of oxygen, nitrogen, and water, the atoms of oxygen (O) and nitrogen (N) unite and form hyponitrous acid (N^2O^4) which in turn unites with the water (H^2O) and forms nitric acid ($^2HNO^3$).

Now, electric discharges are of frequent occurrence, and if nitric acid and its fixed compounds are formed in the atmosphere, even in very small quantities, we must conclude that they owe their origin to the above mentioned chemical process.

It was for a long time thought that the oxygen was first changed into ozone, and by the action of this, nitrogen was converted into nitric acid.

But later investigations by L. Carius have proved that the ozone in a mixture of nitrogen and water has no effect whatever; that no nitric or hyponitrous acid, and no ammonia are formed by means of it. There remains, therefore, no other explanation of the appearance of nitric acid during an electric discharge than that the atoms of oxygen and nitrogen are set in motion by the electric spark, and in this active state have the power of uniting with each other. During this change the ozone is formed. Ozone and nitric acid are not, therefore, mutually dependent, but exist together always as products of one and the same process.

That the formation of nitric acid should be attributed to motion—that is to the vibrations into which the atoms of oxygen and nitrogen are thrown by the electric discharge, is not strange when we remember that, according to the latest theories of heat and motion (the principle of the conservation of force), all chemical changes are caused by the motion of the least particles of an element—atoms and molecules.

It is not our purpose to consider these theories at length. It is sufficient for us to know that the elements oxygen and nitrogen unite, by means of an electric discharge, and form nitric acid; that this acid exists in the air free, and must be formed from the free nitrogen of the air by the means named.

The large formations of saltpetre found in certain parts of the tropics may be accounted for in this way: The nitric acid formed in these places from the elements of the air, by means of the electricity accumulated in it, has united with the carbonates of alkalies in the soil, and formed nitrates of the alkalies.

2. Besides the process just given, there is also another by which the nitrogen of the air is changed from a free to a combined state. Until within a few years it was believed that by evaporating water, nitride and nitrate of ammonia were formed at the expense of the free nitrogen of the air! But the experiments made on the subject by L. Carius have proved this supposition to be false. He allowed water to evaporate in a partially open vessel, conducting through it a strong current of air from which every trace of combined nitrogen had been removed by several washings in sulphuric acid and potassium hydrate. He could detect no nitride or nitrate of ammonia in the evaporated water; but subsequently he found that by means of ozone—and Weith and Weber that by means of superoxide of hydrogen—ammonia could be converted into these compounds. Since an abundance of ozone and superoxide of hydrogen result from the evaporation of water, and ammonia formed from nitrogenous matter upon the earth is always present in the air, the appearance of nitrides and nitrates of ammonia is easily explained. To this process (the oxidation of ammonia) a portion of the nitric acid of the atmosphere of course owes its origin, so that only a small part remains that is due to the conversion of free nitrogen into combined by means of the electricity.

There is still another process going on over the earth's surface which seems to produce similar results. It is that of oxidation. As we have accepted the theory that by means of electricity atoms of oxygen and nitrogen are put in motion, and, by exchanging their individual for a common movement, combine with each other, we can no doubt believe that by oxidation and combustion the same motion is caused and the same result effected.

It was ascertained by Kolby that if a hydrogen flame were caused to burn in the open neck of an inverted receiver filled with oxygen, hyponitrous acid would be formed. According to Th. Saussure, Berzilius, and Bunsen, nitrate of ammonia is formed by the combustion of hydrogen in an atmosphere of oxygen and nitrogen. Bence Jones noticed the appearance of nitric acid, and Böttcher that of hyponitrous acid during the burning of alcohol, charcoal, wax, illuminating gas, and other organic substances, in the air. A. W. Hofmann, by burning hydrogen with oxygen in thirty grms. of water which had been formed, obtained so much nitric acid that upon neutralizing the water with ammonia and evaporating it, clear crystals of nitrate of ammonia were deposited.

The experiments of different chemists have shown that only a small quantity of ammonia is formed by the oxidation of lead or iron in moist air, $Fe_2 + 3H_2O + 2N = Fe_2O_3 + 2NH_3$.

These phenomena Arm. Müller, of Zurich, attempted to explain by the bold and ingenious hypothesis that light, as well as electricity, could resolve water into its elements, hydrogen and oxygen. He found, however, that as complete a decomposition and separation did not result from the action of light as from that of electricity; that the elements in their union as water were only freed by it, and thus in a condition to unite more readily with other elements. By this hypothesis he explained a number of chemical changes which it was known could not take place in the absence of light and water—among others, the accumulation of nitrogen in plants. He believed that in plant cells there was to be found always water which had been so acted upon by light as to be in a condition to make atmospheric nitrogen available to the plants through their leaves.

Recently Berthelot has given to the public some most important experiments in the power of plants to absorb free nitrogen from the air. He found that organic substances (benzine, turpentine, dextrine, paper, etc.), in a humid atmosphere of nitrogen, were converted by means of electricity into a greater or less quantity of nitrogen, combined and as ammonia. He is of the opinion that in a similar way, by the action of the electric currents in the atmosphere, plants acquire the power of absorbing the free nitrogen of the air. According to earlier investigations (particularly those of G. Ville, Cloez, and Gratiolet,) which were conducted apparently with the greatest care and deliberation, there can be no doubt that plants, without nitrogenous nourishment in the soil, can supply themselves by absorbing either ammonia or free nitrogen from the atmosphere. From these investigations figures were collated, which show a greater proportion of nitrogen in plants growing in a soil entirely free from it than was found in the seed.

But accurate experiments by Bousingault have shown the incorrectness of these results, and with him Mène, and later, Harting and Gunning, concluded that at least the theory of the power of plants to absorb free atmospheric nitrogen could not be considered as established.

It is true that J. Filtbogen also found in two oat plants, in harvest, 5.7 and 1.4 milligrms. more nitrogen than was contained in the original seeds and furnished them in solution as nourishment. He stated the simple fact only, without attempting an explanation of it.

F. Selmi stated that mushrooms and coarser moulds evolve hydrogen, which oxidizes at the expense of the oxygen of the air; by this process a small part of the nitrogen of the air is converted into ammonia. Some time after he asserted that by means of zinc hydrogen gas could be changed into an acid or alkaline solution.

Fausto Sestini and Giacomo del Torre also found a small increase of nitrogen in the mould upon lactic acid, but believed that it was taken from the ammonia in the atmosphere and not formed from free nitrogen.

Jodin and Hallier have advanced the opinion that many moulds, which contain sometimes as high as six per cent. of nitrogen, take their organic matter from the air in the form of free nitrogen, and are, on this account, of especial importance in agriculture.

But W. Wolff and O. Zimmerman have examined different moulds with reference to this, and found that not a single mould takes up and makes part of itself the free nitrogen of the air.

When we consider, in addition to all this, the result of the investigations of Ad. Meyer, according to which the leaves of plants are undoubtedly so constructed as to absorb gaseous ammonia, but only in very small quantities, we must regard as highly improbable the theory that plants, through their leaves or in some such way, have the power to take up the free nitrogen of the air and change it into a combined state. At least, the question must be considered an open one.

Black humus substances (boneash, humus, etc.) and even field soil itself are capable of thus absorbing and changing nitrogen, it is asserted.

E. Wernekinck proved that by heating boneash with steam a large amount of ammonia could be generated; he maintained that this did not arise altogether from the nitrogen contained in the bone, but in part from that of the atmosphere. He even believed that this property of boneash made it of value for the production of the salts of ammonia used in making fertilizers.

E. Simon found that humic acid coming in contact with air free from ammonia gained nitrogen and gave off ammonia; hence he concluded that it was capable of absorbing nitrogen from the air and converting it into ammonia.

P. P. Dehérain also noticed the absorption and conversion of atmospheric nitrogen in organic matter containing carbon (as glucose in alkaline solution), and in the humus substances of the soil. He ascertained also that the air over these substances lost not only oxygen but also nitrogen, while at the same time there was an increase of combined nitrogen.

In connection with these investigations P. Truchot examined different kinds of soil with reference to the amount of carbon and nitrogen they contained, and found that the quantity of nitrogen in the soil with a great deal of carbon (also with the humus compounds of the earth) varied. He considered these facts an indication of the correctness of Dehérain's theory.

P. Thénard also states, in support of this theory, that virgin soil (such as the rocky soil in wine-producing regions), though originally poor in nitrogen, will gradually enrich itself, even though the amount of nitrogen taken from it by every harvest is not replaced.

Although all these accounts have every appearance of probability; although it is surprising that, for example, the amount of nitrogen in a crop of Lupinen grown upon the dry, sterile meadow lands of northwestern Germany—which, within the memory of man, have never received any manure—is not in proportion to the nitrogen found in the soil, yet the results of just as many experiments by as many different investigators are opposed to them, and prove the theories founded upon them to be either very improbable or false.

Thus O. Kohlrausch made experiments from which it was evident that the ammonia evolved in vapor of spodium was derived not from the nitrogen of the air, but from carbon and nitrogen.

T. Schlösing and W. Wolff repeated the experiments made by Dehérain again and again. They, for example, confined grape sugar with soda and water, or, also, different soils, in a nitrogen atmosphere for days and weeks, varying the temperature, but could detect no loss of nitrogen. Indeed, the amount of nitrogen was even greater at the close of the experiment made by Schlösing. A. Pagel refuted the results of E. Simon. He allowed moor earth to remain a long time with atmospheric air in a closed vessel, and ascertained the amount of nitrogen in the air both before and after the experiment. He found that the mixture absorbed oxygen very readily, but not a trace of nitrogen.

We conducted the examination of this question in the following way: Moor earth, turf coal, ulmic acid formed from moor acid, and burnt sugar, made sufficiently moist (first with 60–62 per cent., last 90–93 per cent. of water), were put into a large flask; this was closed with a firm rubber cork having in the middle an upright glass rod. One-half of the latter was filled with soda-lime, and the other with pieces of pumice stone which were saturated with sulphuric acid. In this way atmospheric air could pass down one side unhindered, while ammonia and nitric acid were prevented from escaping through the other.

The flask stood from the 18th of February till the 14th of December, 1876; the amount of ammonia in the dry substance, and the whole amount of nitrogen were as follows:

	Moor-earth.	Turf-coal.	Ulmic acid from burnt sugar.	Ulmic acid from turf.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
1. Amount of ammonia:				
Before the experiment	0.61	......	......	0.154
After the experiment	0.169	Trace.	......	0.188
2. Amount of nitrogen:				
Before the experiment	0.948	1.272	Trace.	2.422
After the experiment	0.971	1.279	"	2.511

By this it is seen that the nitrogen, as well in the form of ammonia as in organic combination, remained about the same in all four substances during the experiment. The variations are within the limit of error in the calculation, and will not warrant the conclusion that dark, humus substances are capable of absorbing atmospheric nitrogen, and changing it into a combined state.

Up to the present time, the only ones of all the processes which have been noticed, that are with certainty known to convert the oxygen and nitrogen of the air into nitric acid, are the electric discharge and oxydation. These chemical changes are continually taking place in the atmosphere. . The nitric acid thus formed is absorbed by the ammonia present in the water, snow, etc., of the air, and carried into the ground. Here it is taken up by the roots of plants and in the plant is changed into complicated organic compounds.

It has been determined by many calculations as to the amount of nitric acid and ammonia in rain water that in our latitude to every hectar there falls during the year, in rain and snow, about 1.5 kilo. of nitrogen, in the form of nitric acid; 3 kilo. of nitrogen, in the form of ammonia.

Since the experiments (previously given) of L. Carius, Weith, and Weber have proved that by means of ozone ammonia is changed to nitrate of ammonia, we will consider that of this 1.5 kilo. of nitrogen, in the form of nitric acid, only 1 kilo. is changed from a free to a combined state by the action of electricity and by oxydation in the air. According to this, for every quarter of a mile of the surface of the earth, 5,617 kilo., or for its whole surface, 52,019,037,000 kilo. of nitrogen are taken from the atmosphere and converted into nitric acid. There are, it is true, rainless regions, but there are also others where it rains daily, and when we remember that the formation of this acid, in rain-drops, under the influence of the strong electric currents peculiar to those localities would be very greatly increased, this estimate will not seem too high. Now, there rests upon every square meter of the earth's surface a column of air (in round numbers) 10,000 kilo. in weight; or, upon one hectar

10,000 square meters; in round numbers, 100,000,000 kilo. Considering, for the sake of clearness, half the weight of the nitrogen equal to that of the oxygen, there are, in this vicinity, about 80,000,000 kilo. of nitrogen; but here, according to the preceding calculation, 1 kilo. per year is changed from a free to a combined state. Hence, eighty millions of years must elapse before the atmosphere will lose even one per cent. in weight of nitrogen, and become proportionally richer in oxygen. This length of time, compared to the age of man, covers half of eternity. But in the history of our globe we do not reckon time by thousands and millions of years. It is clear that if the process of changing free nitrogen into combined should continue without a reverse process to maintain the present proportion there would come at last a time in the history of the earth when the nitrogen of the air would entirely disappear. A few geologists, indeed, have asserted that all the combined nitrogen now circulating in nature originated from the free nitrogen of the air in the manner just explained.

The question, whether or not there exists in nature a reverse process by which combined nitrogen is released, and the proportion between them thus kept the same, is certainly an interesting one, and worthy of consideration.

But before we proceed to our investigation we will briefly trace the course which combined nitrogen takes in plants and animals. Plants take their nitrogen from the soil, and almost entirely in the form of nitric acid and ammonia. The fact that urea, lencine, lyrosine, etc., give up their nitrogen to plants is of little interest to us, since this is an exception in nature.

For about twenty years the question has been argued, pro and con, whether the nitrogen carried into the ground by rains, in addition to that furnished by stall-manure, is sufficient to keep our fields fertile and our plants provided with nitrogenous food for any length of time. Justus against Liebig maintained, even to the end of his life, that it was, and condemned all artificial means for supplying it. The question has been decided differently by us, and the generally received opinion to-day is that without supplies of nitrogen besides phosphoric acid in fertilizers intensive farming is not possible.

Plants convert mineral combinations of nitrogen into those highly organized protein or egg substances with which the blood of animals is renewed, and from which, in part, their muscles and tissues are made. Another part of nitrogenous matter undergoes decomposition by the action of oxygen, passes into low organic compounds, such as urea, uric acid and hippuric acid, and is carried off in urine; a very small part is converted into ammonia, and leaves the body through the skin and lungs. Another portion of the nitrogen obtained from vegetable food remains in the body, and is used in the construction and growth of organs. The last and undigested portion is separated in the fœces.

A few physiologists have advanced the opinion that, by the decomposition of nitrogenous matter in the body, free nitrogen is evolved and thrown off from the lungs as a gas.

The first experiments on this subject, made public by J. Seegen and J. Nowak, were proved to be incorrect by the investigators themselves, as well as by C. Voit, and at the experimental station at Weende; but recently they have again come forward with experiments, which make their first assertions probable. But the fact they have proved that the nitrogen taken up by animals in a combined state leaves the body in the same condition, really makes the experiment of little importance. The combined nitrogen, separated from the body by means of the skin and excrements, as well as that of the entire animal organism and of decaying plants, must undergo a series of changes before it can be again taken up by plants.

These highly organized compounds of nitrogen are resolved by degrees again into nitric acid and ammonia. These become mineralized before they can be again taken up by plants.

But this resolution is attended by more or less loss, which must be taken into consideration by the farmer.

1. The excrements of men and animals lie for a long time, usually in vaults and manure piles, before they are again incorporated in the soil to be used as food for plants. During this time carbonate of ammonia is gradually formed, and being very volatile is carried off by the wind. Fr. Erismann found that a vault containing 18. cu. meters of excrement gave to the air 2.04 kilo. of ammonia in twenty-four hours. H. v. Somaruga and Varentrapp estimated the loss of nitrogen in excrements remaining in vaults to be from ⅓ to ½ of the original amount. A. Pagel states that if boneash undergoes fermentation without the presence of some good absorbent of ammonia (as gypsum), 39.2 per cent. of the nitrogen is lost.

We confined stall manure in a bell glass, which stood, air-tight, upon a false plate with a hole in the center, and had in the top of it an escape tube. The lower opening was connected with a sulphuric acid drying apparatus, the tube at the top, with a bulb, in which concentrated sulphuric acid was placed. The aperture was left closed for a long time; then from 12–18 liters of air were forced through it. The manure was poured in to the depth of 4¼ kilo., on the 15th of July, 1876, and showed at last a thick crust of mold. The amount of ammonia obtained from the sulphuric acid was as follows: September 5th, 0 001395 grm.; October 23d, 1876, 0 001176 grm.; March 1st, 1877, 0.00105 grm.

These quantities are very small, and show that on account of the straw in stall manure it is very difficult to separate the ammonia. We could detect, quantitatively, no ammonia in from 150 to 200 liters of stable air, from cow, horse, and sheep stalls—the latter having beds of earth and straw—using sulphuric acid as the absorbent. Hellriegel also (Heiden's Düngerlehre, Vol. II, p. 144), states that only a very small amount of nitrogen is volatilized from stall manure, even in moist air. Opposed to this is the result obtained by purifying the air of a horse stall. In 1,000 liters of air were formed—

Below, over the manure.	Under the ceiling.
0.0218 grm.	0.9457 grm. ammonia.
Or 0.057 vol.	0.077 vol. "

Which, in a stall of 52.05 cu. meters, amounts to 1.1348 grm. and 2 398 grm. ammonia.

This amount is not to be undervalued, and it increases probably from 100 to 1,000 fold, when the manure is further exposed by being carried on wagons to the field and left to the action of sun and wind. That the use of gypsum would be profitable under such circumstances, is very evident. For, according to the formula—

$CaSO_4$	$+$	$(NH_4)_2CO_3$	$=$	$CaCO_3$	$+$	$(NH_4)_2SO_4$
Sulphate of lime.		Carbonate of ammonia.		Carbonate of lime.		Sulphate of ammonia.

The sulphate of lime (gypsum) unites with the carbonate of ammonia to form carbonate of lime and sulphate of ammonia, which is much more difficultly volatilized than the former. It is a fact that those stalls that have been strewn with gypsum have no odor of ammonia. The air is almost entirely free from it.

2. A great part, indeed the greater part, of the nitrogen which passes into agricultural products, finds its way, in grains, in the cattle fed with these, and in milk, into the larger cities. Only a part of this nitrogen is returned to the soil by the use of the offal and excrements of these cities as fertilizers; an important part is carried by the canals and rivers into the sea. Here it is taken up by the sea plants and fishes. In the sea a portion of the wealth of our soil is deposited daily; and it is there that we will find our fertilizers when the present sources of nitrogen—guano and Chili saltpetre—shall have been exhausted.

Indeed we have already a few factories (as in Germany, France, etc.)

which gather up again the nitrogen poured into the sea by manufacturing from unedible fish the so-called fish guano.

Yet in both of these processes nitrogen escapes in a combined form; it is carried away from a single farm, from the whole country, but is made useful in another place. This is not the case in the process we will now give, namely:

3. The disengagement of free nitrogen by putrefaction.

We have already explained a process in nature by which nitrogen is changed from a free to a combined state, and mentioned the possibility that, after millions of years, it would be exhausted from the air, unless some provision were made for fresh supplies This, as we have intimated, it is now known has been made.

The first who, to my knowledge, proved conclusively that by the putrefaction of nitrogenous organic matter free nitrogen is evolved was M. Jules Reiset. He allowed flesh to putrify in a closed bell glass, and found, after a time, that the air was richer in nitrogen. Hereupon Lawes and Gilbert made numerous experiments on the subject. They allowed corn seed, mixed with bounce and hot earth, and occasionally subjected to a stream of air, to putrefy in a closed vessel, and ascertained, during the experiment, the amount of nitrogen, in the form of ammonia, as well as in organic compounds; at the end of the experiment the loss of nitrogen amounted to almost forty per cent. of the original amount. Since, on account of suitable apparatus, no ammonia could escape, and no other compounds of nitrogen, such as nitric acid, had been formed, they concluded, and correctly, that part of the original nitrogen had volatilized in a free state.

E. Peters found that hay lost nitrogen by being stored. The result of his experiment was as follows:

	Hay I.	Hay II.
Nitrogen at the beginning of the investigation..	1.78 per cent.	1.48 per cent.
Two years later..............................	1.68 "	1.38 "

Many experiments have been made on this subject at this station. The object for which they were originally undertaken was to determine whether or not there is a loss of free nitrogen during the decomposition of fertilizers in the soil. This question is of practical importance to farmers, for if such were really the case, those fertilizers (boneash, horn-ash, fish-guano, etc.) which must undergo decomposition in the ground before the nitrogen they contain can be taken up by plants, would not be used, and supplies of nitrogen, in the form of nitric acid and ammonia, would take their place.

The experiments were made in this way: The mass to be tested (boneash, flesh, and cow-manure) was placed in an air-tight flask, and care was taken that the entrance of nitrogen compounds from the air, or the escape of the same from the decomposing matter, was impossible.

By carefully estimating the amount of nitrogen and the quantity of organic matter, both before and after the experiment, the probable loss was ascertained.

In one of the first experiments we made use of gypsum, besides earth, in order to prevent any escape of carbonate of ammonia. We were surprised to find that here, as in the mixture of earth and boneash, we could detect no loss of nitrogen, while in the decomposition of boneash and flesh, without the addition of earth and gypsum, the loss was considerable.

These experiments were repeated in different ways; instead of gypsum, sulphates of magnesia and potassium were used, with the same result.

An investigation of the decomposition of soil and boneash showed, in opposition to the previous results, that the loss of nitrogen was the same as when boneash was used alone. From this we concluded that the very small amount of moisture in the mixture was the cause of the loss. We then took boneash and earth through a further course of investigation, first sufficiently moistened with six hundred and again with only three hundred cubic centimeters of water; in the latter case there was a loss of nitrogen, while none could be detected in the former.

The results of these experiments will be found on the following page:

TABLE OF RESULTS OF EXPERIMENTS.

Experiment, and time of same.	Applied Material.	Amount of Nitrogen.		More (×) or less (—) nitrogen obtained.		Nitrogen in the form of ammonia after the decomposition. Per cent.
		Before decomposition. grm.	After decomposition. grm.	In grm.	In per cent.	
I. From June 14th, till Nov. 2d, 1871.	1. Boneash	20.910	19.259	—1.651	—7.89	50 74
	2. Boneash × earth	13 863	13 904	×0 041	×0.29	54 75
II. From Jan. 4th, till May 21st, 1872.	1. Boneash × gypsum	17.185	17.244	×0.059	×0.34	51.79
	2. Flesh × gypsum	18 023	18 068	×0.045	×0.25	60.88
	3. Boneash × earth	12.281	12.309	×0.028	×0.23	45.85
III. From Jan. 3d, till Sept. 26th, 1872.	1. Boneash without gypsum	20.530	19.668	—0 862	—4 19	69.30
	2. Boneash with gypsum	20.530	20 571	×0.041	×0.19	62.28
	3 Flesh without gypsum	18 340	17.919	—0.421	—2 29	68.37
	4. Flesh with gypsum	18.340	18.355	×0.015	×0.08	73.49
	5. Boneash × earth	14.275	14.208	×0 067	—0 47	49.69
IV. From Nov. 28th, 1873, till April 20th, 1874.	1. Boneash without addition	20.300	18 612	—1.688	—8 31	37.53
	2. Boneash × gypsum	20.300	20.439	×0 139	×0.68	36.25
	3. Boneash × magnesia-potassa	20 300	20.192	—0.108	—0.53	21.70
	4. Boneash × natural soil	21 950	20.522	—1 428	—6.50	53.59
	5. Boneash × hot soil	21.500	18.543	—2.957	—13 75	49 30
V. From Oct. 6th, 1874, till March 9th, 1875.	1. ¼ kilo. boneash × 1 kilo. soil	11.720	11.869	×0 149	×1.27	54.23
	2. ½ kilo. boneash × ½ kilo. soil	21.595	21.616	×0.021	×0 09	48 32
VI. From Oct. 21st. 1875, till June 17th, 1876.	1. Cow manure × muck water	4.4192	4.3627	—0.0565	—1.27	58.17
	2. Cow manure with gypsum	4.4274	4 3696	—0.0578	—1.28	58 57
	3. Cow manure with magnesia-potassa	4.8645	4.8055	—0.0590	—1.21	32.01
	4. ¼ kilo. boneash × ½ kilo. soil × 600 c. c. of water	11.415	11.434	×0.019	×0.17	59.19
	5. ¼ kilo. boneash × ½ kilo. soil × 300 c. c. of water	11.415	10 7897	—0.6253	—5.48	65.17

From these experiments the following conclusions are derived:

a. By the decomposition of nitrogenous organic matter a more or less important part of the combined nitrogen passes into a free gaseous state, or at least into a form which, unlike ammonia and nitric acid, can be retained by means of ordinary absorbents.

Recently G. Hüfner has denied that this is the case. He filled up with oxygen an air-tight flask containing fibrin, and found, after the mass had stood a long time, that much carbonic acid, but no free nitrogen, had passed into the surrounding air; the small quantity of nitrogen detected was within the limit of error.

We have made experiments in a similar way. Pulverized cheese mixed with pieces of pumice-stone was placed upon a dish under a bell-glass, which stood in a receiver filled with caustic soda. The opening above was connected by a tube with an oxygen flask, from which oxygen could be forced by means of a Bürette, raised and filled with water. Connection was made by opening a stop-cock.

As the carbonic acid in process of formation in the bellglass was absorbed by the caustic soda, the fluid in the same arose, since no air could enter. Oxygen would then be supplied from the flask until the original proportion was obtained. The absorption of the oxygen took place at first very rapidly, but gradually became less.

The first experiment of this kind continued from October 11th till November 14th; the air in the bellglass gave:

	Before the experiment.	After the experiment.
N	79 vol. per cent.	92.49 vol. per cent.
O	21 vol. per cent.	7.51 vol. per cent.

The entire amount of oxygen added was 6,600 cu. centimeters; this contained at the beginning of the experiment 1.52, at the end 6.39 per cent. in volume, of nitrogen. Since the oxygen was forced into the bellglass merely through distilled water, which had been boiled, and on this account it is more than probable that the increase of nitrogen in the oxygen flask was caused by the diffusion of the air from the bellglass into it when connection was made between them, we will consider that 6,600 cu. centimeters of oxygen, combined with 3 96 per cent. of nitrogen, remained in the bellglass.

The bellglass contained 2,900 cu. centimeters; we have then air in the bellglass:

	Before the experiment.	After the experiment.
N	2,291 c. c.	2,681.2 c. c.
O	609 c. c.	217.8 c. c.

The air in the bellglass gained about 390.2 c. c. of nitrogen; while, according to our calculation, 261.3 c. c. of the nitrogen were combined with the 6,600 c. c. of oxygen—$\frac{6600 \times 3.96}{100} = 261.3$; hence there remained still, even by the least favorable calculation, 128.9 c. c. of nitrogen which must have been evolved in a free state from the decomposing cheese.

b. If to decomposing nitrogenous matter gypsum, lime, or magnesia salts, earth, or any good absorbent of ammonia be added, or if the mass (cow manure and muck water) is kept in a half fluid state, no loss of nitrogen is observed. Water in sufficient quantity, and media for ammonia, prevent the disengagement of free nitrogen.

A. Pagel observed the same. During the fermentation of bone-ash without gypsum, 39.2 per cent. of the original amount of nitrogen escaped, while this loss, when gypsum was used, was reduced to 4-7 per cent.

By these investigations it is clearly proven that, in the fermentation of bone-ash, fish guano, or other nitrogenous fertilizers, farmers, if they wish to prevent a loss of nitrogen, are obliged to use gypsum or humus earth, and to keep the mass sufficiently wet.

c. In the mixture of earth and bone-ash (experiment IV, Nos. 5 and 6, and experiment VI, No. 5), which was made very wet, there was, nevertheless, a great loss of nitrogen. From this it is seen that, under certain circumstances, there is a loss of free nitrogen in the soil.

Further evidence of this was given in an experiment made by Schlösing and Boussingault.

d. Upon the facts furnished by all these experiments, I base the following explanation of the disengagement of free nitrogen during putrefaction:

By the action of oxygen ammonia is formed during the successive stages of the decomposition of any nitrogenous substance. If an absorbing medium, such as gypsum, sulphate of potash or magnesia, earth, or a sufficient quantity of water, has been added, the ammonia will combine with it, and further decomposition be prevented. But if no menstrua for ammonia be present, or, if supplied, not in sufficient quantity, or, finally, if the small amount of water allows the free access of oxygen to the porous nitrogenous matter, then the ammonia will be oxidized, and form (as by the action of chlorine it forms muriatic acid and nitrogen) water and nitrogen.

With this view, all the facts which have been collected up to the present time agree. Since an experiment (already given), made by L. Carius, proved that by means of ozone ammonia becomes nitrate of ammonia, it will not be considered improbable that while free nitrogen is being evolved, ammonia should be oxidized by means of oxygen. I wrote to him at the time his experiment was made, asking if he had not detected a trace of free nitrogen. He replied that up to that time he had made no tests for it, but in future would give it his attention. Before his self-appointed task was completed, he died.

As early as 1834, de Saussure discovered that when the air over decomposing matter is rich in oxygen, the hydrogen evolved is changed to water. Hence the oxidation of ammonia under the same circumstances can not be regarded as exceptional. I was confirmed in my opinion that such was really the chemical change by the result of an experiment made by Armsby. Nitrogenous substances (stall manure and flesh) were allowed to decompose in an atmosphere poor in nitrogen and rich in oxygen. The loss of nitrogen was greatest when the air contained most oxygen. He, too, believed that this loss was caused by oxidation.

4. According to H. T. Brown, there is still another process in nature by which free nitrogen is separated from combined. In alcoholic fermentation azotic acid and free nitrogen are formed if the fermenting fluid contains albumen.

An experiment on this subject was made by us to ascertain whether or not free nitrogen is separated in the germination of seeds. The seeds were allowed to sprout in a bell-glass, placed in connection with an oxygen flask, as in the experiment on the decomposition of cheese. We could detect no increase of nitrogen in rye, wheat, and flax seed

H. Karsten takes a different view, but the experiments of R. Sachse, W. Pfeffer, A. Leclerc, H. Laskovsky, and E. Schulze, made with very various seeds, agree with that made by us, and we may conclude that in this process no free nitrogen is formed.

5. The combustion of nitrogenous matter is the only other process known, with certainty, to produce free nitrogen. Now, although all our fuel (as stone coal) contains nitrogenous organic matter, the amount of free nitrogen (most of which has been condensed from sea-air) volatilized in this way is very small.

Every report of gun or cannon sets free a portion of the nitrogen which nature, by a long series of changes, has brought into a combined state. It has been ascertained by experiments that in the burning of 100 kilo. of powder, 9 (or more correctly 8 9) kilo. of free nitrogen are formed. The German army, in times of peace, uses about 500,000 kilo. of powder; hence it alone is the cause of the formation of 45,000 kilo. of free nitrogen, which, in course of time, again becomes combined.

It will be seen from this statement that the quantity of nitrogen daily changed from a combined to a free state is not inconsiderable.

Which of the two processes predominates can be stated as yet only approximately. It is possible that, owing to electric discharges and processes of oxidation, the amount of free nitrogen is gradually diminishing; it is also possible that the reverse processes of putrefaction and combustion are causing it to increase gradually. The variation in either case is very slight in comparison with the whole amount of nitrogen in the air, and they, even if not entirely, are yet so nearly balanced that any change in the composition of the air must be referred to so remote a period that it may be called eternity.

THE PART PLAYED IN ORGANIC NATURE BY CARBON.

BY PROF. ADOLF BAEYER.

[*Translated.*]

Notwithstanding the countless number of forms that make up the animal and vegetable kingdoms, the ultimate elements of which these organic bodies are composed are very few in number. Those chiefly found are carbon, hydrogen, and nitrogen, while sulphur, phosphorous, and other elements occur in lesser quantities. There is no single substance that is the exclusive result of vital organization, no ingredient of the animal or vegetable produced by their growth that does not contain carbon. It will, on this account, be necessary to begin the study of the laws which govern organic life with a discussion of this element and the nature of its compounds.

Carbon is found in the earth in three different forms—that of the diamond, of graphite, and of charcoal. With the exception of graphite, and, perhaps, of the diamond—the origin of which has not yet with certainty been determined—carbon is formed from putrefied organic matter. Our lignite and mineral coal beds are nothing else than the remains of vast accumulations of the vegetable matter of remote ages, and the coal which we find in small quantities in turf and near the surface in field soil has been formed from vegetation not much older than mankind. Since, according to geology, the earth was originally a hot, liquid mass, these accumulations of coal could take place only after the cooling of the same, and the question naturally arises, In what form did the carbon exist before the appearance of life upon the globe? Although this question can not be answered definitely, it is highly probable that it was held in part in the atmosphere in the form of carbonic acid, in part in the mineral kingdom. We find in the earth at the present time, in carbonates of lime, which as chalk, limestone, and marble, form whole chains of mountains, millions of hundred-weights of carbon.

It is our purpose in the present article to show how carbon passed from the carbonic acid of the atmosphere into the plant and animal life of that remote period; how by the decay of the same it was stored up, a black, lifeless mass, in the depths of the earth, and how it awakes from this dark grave, able again to preserve and propagate the life of numberless creatures.

If a piece of coal be burned in a stove, it slowly disappears, and only a small quantity of ash remains. The loss of the coal is, however, only apparent. It is changed by the oxygen of the air into a substance which is invisible—carbonic acid—and escapes as a gas through the chimney. By this process not the least amount of carbon is lost, since the weight of the acid is exactly equal to that of the carbon and the oxygen necessary for the combustion. In order to understand this process perfectly, we must have some idea of what carbon, oxygen, and carbonic acid are. The eye can not aid us in this matter. To it coal appears to be a uniform, black mass, while the colorless gases, oxygen and carbonic acid, are invisible. Even experimental chemistry gives us no satisfactory explanation of their nature. It teaches us, it is true, that carbon and oxygen are elements, and that carbonic acid can be resolved into carbon and oxygen, but it does not present to our imagination a picture of the nature and changes of these substances.

Our steam engines and telegraphic system have made us lords of space upon the earth. We can state of what elements the remotest of celestial bodies are composed, yet we do not know what a drop of water is. To a casual observer water, glass, and air appear to be perfectly homogeneous substances, but a careful investigation of their properties, physical and chemical, convinces us that this theory is wholly inadequate. The phenomena of matter can be satisfactorily explained only by the now generally received atomic theory. This is not the result of recent investigations. The old Grecian philosophers had a similar idea of the nature of matter. Democritus, who was born in the year 460 B.C., in Abdera, an Ionian provincial town in Asia Minor, advanced the opinion that all substances were composed of particles so small that they could not be again divided, and called, for this reason, atoms. This idea, grasped at that early day by a philosopher whose extended travels had given him rare opportunities for the study of nature, received recognition for the first time in the latter part of the last century, by an Englishman named Dalton, and is the starting point of the remarkable progress made in chemistry and the related sciences since that time.

Matter occurs in three different states, the solid, liquid, and gaseous. Whatever be the form under which a body presents itself, it is the general opinion of physicists that it is not composed of continuous matter, but is an aggregation of distinct parts held at a distance from each other. According to this theory the difference between the three forms depends upon the distance of the particles from each other. In gases, such as hydrogen, oxygen, nitrogen, or carbonic acid, the particles are separated by a very great distance, in fluids they are placed nearer each other, and in solids they are the least distance apart. Imagine, for example, a vessel filled with oxygen. In it we have a very great number—probably millions—of single small bodies, which are separated like the celestial bodies in space, and are probably moving hither and thither with great rapidity. It is with the study of these celestial bodies in miniature that chemistry is now occupied. It has been ascertained that even in the simple gases, that is those from which nothing else can be obtained, as for example oxygen, hydrogen, or nitrogen, these molecules are divided into two parts, which are held together as are the planets of the solar system, and which move together in space exactly as the earth revolves around the sun, and at the same time moves forward with it in space.

If oxygen is brought in contact with glowing carbon, each one of these atoms is combined with a certain amount of carbon, and a new molecule called carbonic acid is formed. If the carbon is burned in a receiver of oxygen, the contents of which is known, it will be seen that no expansion of the gas takes place during the change into carbonic acid. This leads to the conclusion that the number of molecules in the vessel has not been increased; hence the new molecule of carbonic acid is composed of the original molecule of oxygen, which we know is in two parts, and one atom of carbon, which chemical experiments have shown cannot be divided. This is expressed scientifically in this way: A molecule of oxygen consists of two atoms, which are not divisible; carbonic acid, of two atoms of oxygen and one of carbon. Water is similar in its composition to carbonic acid, consisting of one atom of oxygen and two of hydrogen. In aqueous vapor, as it is contained for example in the atmosphere, these particles, or tiny worlds, are at a much greater distance from each other than in water or ice, where they lie as close as the particles of carbon in mineral coal.

Where, in any science, the exact methods of investigation fail, fancy must be allowed free play—speculation must bridge over the chasms which the slow progress of investigators has not yet filled. Aided by the numberless discoveries of this century, theoretical chemistry has penetrated further than it is possible for the microscope to go into the recesses of nature. While this instrument shows us, even in the least particle of carbon, only the same homogeneous, inert mass, chemistry reveals in it myriads of globes, and enables us to estimate their motion and distribution with the same exactness as the astronomer records the movements of the stars. Indeed, our science goes further than astronomy. The astronomer, it is true, calculates the orbit of the earth and the laws which govern its course, but he studies it passively from his high station; it is not subject to him, and his will can never change, even the very least, its eternal course. The chemist, on the contrary, stands like a god in his microcosm. His will controls the movements of numberless worlds; at his pleasure myriads remain bound to the earth as solid matter, or rush with furious haste through the air. Every man has this power. With a burning match this wonderful process can be carried on before our eyes, but only a child has a just appreciation of the magnificence of it. An educated man sees nothing in it but the possibility of fire, and rudely extinguishes it, scorning the disclosures made by nature to an unperverted mind.

To such a perception all nature is quickened. The poorest flint is a wonder, the air which surrounds us is filled with countless spheres; and what shall we say of organic creation, of the plant and mineral kingdoms? In these worlds the action of atoms is far more various than in the burning of carbon. When we discover with the knife and microscope the most delicate vein, have traced the least sap ducts, then our imagination is called into play, and shows us each fiber as a system, consisting probably of more worlds than can be seen in the heavens with the strongest telescope.

According to the celebrated French mathematician, Laplace, our solar system was originally a mass of nebulæ, which gradually condensed into a vast, fiery, molten globe. By its rapid rotation the sphere separated into many smaller ones, as a drop of mercury separates when spilled. The greatest of these spheres formed the sun, the smaller, the planets and satellites. According to this view, our earth, when detached from the great mass, was a huge molten drop. This gradually cooled, and a hard rind formed upon its surface. As long as the surface was still hot, no sea could form, and the water surrounded the solid body as hot vapor. It is probable that this vapor contained carbonic acid greatly in excess of the amount now found in the atmosphere. As long as the temperature of the surface was above 80°, neither plant nor animal life could exist. With a lower temperature all the conditions for the luxuriant development of plant life were supplied. Water and carbonic acid, the most essential means of nourishment, were present in the greatest abundance. How the first plant germ sprang into existence on the rocky surface, surrounded by vapor and carbonic acid, is an impenetrable mystery. Conscientious investigations have proved that no living thing, not a simple mould or the green fibers that form in stagnant water, originate of themselves. As the apple tree springs only from an apple seed, so the simplest plant results only from the seed produced by one of its kind. It is not our purpose to seek the solution of this mystery, nor even to touch upon the much discussed question whether all life proceeded from one germ, or in the beginning every single creature was created after his kind. We will consider the earth's surface covered with vegetation, and from this period continue the history of carbon.

Plants consist of differently formed cells, composed of a delicate membrane, which is very similar to cotton. In these cells a sap is found which contains, as one of its most important constituents, albumen. Plants, during that first period, were surrounded by carbonic acid, and partly bathed in water very largely impregnated with it. This acid, both as a gas and dissolved in water, penetrated the delicate walls which surrounded the seeds and came in contact with the liquid filling the cells Under the quickening influence of the sun's rays a remarkable change takes place in the acid. The oxygen of the compound escapes in part as a gas, leaving the atoms of carbon, which were combined with it, lying together, and, in this way, producing the material from which the organs of plants are formed. The oxygen, set free from its combinations, mixes at once with the water, and, to a certain extent, with nitrogen. In this way, sugar, starch, cotton, the vegetable acids, albumen, in short, all the numberless substances found in plants, are produced.

The first step, then, toward the formation of these complex compounds is the liberation of the oxygen from carbonic acid. We can imitate this process in the laboratory without the aid of a living being, and produce artificially many of these substances.

These compounds, moreover, are very different in composition. In oxalic acid there are three, in malic acid, four, in sugar, gum, starch, and cellulose, six atoms of carbon. That is, just this many particles of carbonic acid are neceseary for the formation of these substances. Fats, and also albumen, contain a still greater number of atoms—wax, for example, thirty, and albumen a hundred. The more complex these substances are the more difficult it is to produce them; but there is scarcely a doubt, judging from the rapid strides chemistry is now making, that before long they, too, will be made artificially. By this, I do not mean that we shall ever be able to construct the simplest plant, a mould or sea weed. We were never so far from being able to imitate the definite form that belong to each living creature, or thing, as we are to-day.

The origin of animal life is involved in just as much obscurity as that of plants.

It must have occurred after the appearance of vegetation, however, since otherwise the animals would have had no food. They can not take up and make use, directly, of carbonic acid, but get what is necessary for their growth in the various substances of which their food is composed. The sugar, starch, fats, and albumen are carried into the stomachs of herbivorous animals, are decomposed there, taken up by the blood, and used for renewing the different organs of their bodies. With carnivorous animals, the process is much more simple, since their food, consisting of the flesh of similar creatures, requires only a slight change before it is taken up and used for the same purpose. In the great economy of nature at that early period, the animal kingdom, as fossil remains show us, was far inferior to that of plants. The vegetation, judging from the remains which we find of it, must have far surpassed the most luxuriant growth of our tropics. The hot air, with its abundance of carbonic acid, was a mighty agent in the production of those gigantic trees, of which we find only specimens in California, and, doubtless, their massive trunks were covered with a yet more luxuriant drapery of moisture-loving creepers and parasites, such as are found to-day in the hot, moist forests of Brazil. But each life had its limit—the moulds decaying in a short time, the giants of the forest only after thousands of years. In this way, the earth was covered with a thick layer of lifeless tree-trunks, and the remains of plants. These, in course of time, were compressed into a uniform black mass—our mineral coal, which has remained unchanged till the present time.

This transition from living plants to coal was very slow. By far the greatest number of the substances found in plants are nearly related to sugar. For example, starch and cellulose are nothing else than sugar, from which the water is withdrawn. Of this, one can easily convince himself if he will boil either of these substances in dilute sulphuric acid. It will absorb water, and pass again into sugar. While it is known that these substances necessary for the growth of plants are produced in this way, we have never been able to imitate the process. If, for example, sugar is heated, it melts first to a clear, shining fluid, which, when boiled, hardens, and is called barley sugar. When heated further, it loses water, but instead of forming starch or cellulose it remains a brown, sepia-colored mass, called caramel, and is used in colors and potions. When heated still hotter, the caramel becomes a black, glistening, porous coal.

The forests of that prehistoric period were subjected to similar changes. Under their covering of mud the tree-trunks decomposed as the sugar decomposed, by heating, with only this difference, that the process was much more gradual. All wood is similar in composition to plants, the only difference being that its cellular tissues are much thicker.

Following the course of carbon from its source, the carbonic acid of the atmosphere, we perceive that in each new compound the number of its atoms increases. In the plants they arrange themselves, generally, in groups of six, forming sugar and cellulose. In the brown mass which forms the next step, there are certainly many more than six atoms, while in coal, the almost entire loss of oxygen and nitrogen leaves the carbon comparatively pure.

Upon these decaying forests, layer after layer of mud was deposited in the ensuing ages, forming a vast covering of rock, and preserving, undisturbed, the remains of a wonderful vegetation. In thin sections of coal we can even yet trace the original structure of the wood. But this is not the only purpose which these vast cemeteries of plant-life serve. By their combustion we are supplied, not only with the heat we need in our homes, but with force to propel our engines. They have become the most efficient of all agents in the progress of the world, and a source of great wealth to the people, compelled by circumstances to seek homes in their neighborhod. England, for example, owes her industrial greatness, principally, to her beds of coal. Should these ever be exhausted, she will probably be compelled to yield her place to that nation whose possessions have not yet been disturbed. It may be that New England, which is very rich in coal, will succeed to the wealth and civilization of England.

The burning of coal in our stoves and engines not only supplies heat but carbonic acid also, and this acid is just as essential to plant life today as in that prehistoric time. Our chimneys, then, are the channels through which the same atoms of carbonic acid are returned to the atmosphere which thousands of years before passed from it into the vegetable kingdom. In this way man is, in a measure, liquidating the debt of the carbon which nature for so long a time has kept uselessly stored up in the center of the earth. If the formation of coal were still going on, if our forests were buried in the earth, with the disappearance of carbonic acid, which would inevitably follow, all vegetable and hence all animal life would be swept from the globe, leaving it again a bare, bleak mass of rock. That this does not happen is due not only to man, who consumes coal and wood according to his needs, but in a much higher degree to the animal life of the globe, and to the process of putrefaction. Animals, in the first place, herbivorous animals, take carbon in the form of vegetables, and by it restore the parts of their bodies wasted by use. By this process, which we call nutrition, the greater part of the carbon is converted into carbonic acid, passes again into the atmosphere, and can serve anew for the nourishment of plants. With carnivorous animals the process is essentially the same, and a great quantity of carbonic acid is produced.

The chief agent, however, the one by which the carbonic acid taken up by plants is conveyed again into the atmosphere in a rich and uninterrupted stream, is putrefaction. From this process men, as a rule, turn away with horror. This is unjust. It is the night of creation, and furnishes to the soil and atmosphere the material necessary for their work, just as sleep brings to us rest and new strength.

If a tree trunk remains exposed for a long time to the influence of the atmosphere, it decays; that is, it becomes rotten and gradually crumbles into dust. It often happens that a living tree partially decays. Every one remembers the old, gnarled, willow trees, which, in consequence of this decay, were hollow, and whose corruscations and ghost-like forms have so often frightened solitary wanderers. Wood decays only when left exposed to the weather. If this were not the case the furniture in our houses would soon be reduced to powder.

Wood consists, as we know, of cells composed of a substance similar to cotton, and which contain a very small quantity of albumen. Pure cellulose is not liable to decay. Cotton, for example, which contains it in a very pure state, and clean straw can be kept for any length of time. It need never be feared that a straw hut will decay and crumble to dust. It will be observed, however, that the straw found in manure heaps very quickly assumes a brown color, and in a short time is converted by decay into a uniform mass, in which scarcely a single straw can be detected. The cause of this rapid change lies in the nitrogenous—especially the albuminous substances, which are found in the excrements of animals. These putrefy very rapidly, and cause the decay of the otherwise stable cellular tissue. Something very similar takes place in the mouldering of wood. A small quantity of albumen aided by the moisture of the atmosphere effects the change, aud leave it a formless, pondery mass.

The richer in albumen the parts of a plant are, and the more delicate the cellular tissues, the quicker they putrefy. This is seen plainly in leaves. In a very short time after they have fallen, particularly in damp weather, they form a brown, homely mass; while a branch broken off at the same time is still fresh and sound. Under all circumstances moisture is indispensable to putrefaction; since in a dry atmosphere albumen itself hardens, forming a brittle mass that does not undergo further change. We now see why it is that the furniture in our houses and the plants in our herbariums are well preserved, while the same trees or plants in the forest would long since have lost all shape. When it is desired to preserve from decay wood which is exposed to the weather, it is impregnated with some substance which shall form an unchangeable compound with the albuminous constituents of the sap. Sulphate of copper, creosote, and corrosive sublimate are occasionally used for this purpose, the wood being made to imbibe a diluted solution of the preservative, either by being soaked in it or under pressure. In this way our telegraph poles and sleepers of railways are preserved. The same means that supplies us with good meats in warm weather enables us to travel in safety over our railroads.

After the death of animals, just as after that of plants, their component parts are reduced to the primary forms from which they were derived. The animal body consists, for the most part, of albuminous substances—those which cause the decay of plants. If the putrefying animal is surrounded by the debris of plants its decomposition is greatly hastened. This is the case, for example, in the mud of rivers, in which the remains of plants are found mixed with infusoria, snails, and other water animals.

Rapidly as the work of decomposition goes on spontaneously, nature appears to be anxious to hasten it and hurry out of sight the remains of dead generations in order to make a place for the living. Throughout the universe this work is going on, aided in a wonderful manner by the lower order of plants and animals that live in the putrefying bodies. If, for example, fruit be allowed to stand, it will be covered in a short time with mould. Under the microscope this is seen to be composed of numberless fine cells, which attach themselves to certain parts, partly penetrating the fruit and partly raised, like a tiny forest, above it. In some places the fibres thicken, and are filled with fine grains, which are the seeds of the mould. After a time the tissues decay and scatter their contents. These seeds are so tiny that they remain for some time floating about in the air. They are visible only in a very clear light. Very slowly they settle, and, with countless fibril, atoms, and delicate hairs, which the air has raised, form what we call dust. The scattering of these seeds by the wind is of the greatest importance, since, without it, no formation of mould could ensue. No living thing could spring from a mass of decaying fruit if a seed were not carried to it from without. This is shown to be the case by enclosing the fruit in a vessel into which the air, and the seeds with it, can not penetrate. There will be no appearance of mould. It is not enough simply to put the fruit in a vessel, and then shut out the air; for, upon the surface of whatever may be enclosed, or in the air still contained in the vessel, germs may be found. The closed vessel should be plunged several times into boiling water, and in this way all trace of life is destroyed. The fruit can then be kept as long as necessary without fear of decay. The same process has been applied to vegetables and other articles of food. It is called after the inventor—Appert's Method of Preserving. The heat of the water destroys not only mould germs, but all life, animal or vegetable, so that there is nothing to fear from either infusoria or worms in anything properly prepared. Any one can convince himself of the correctness of this statement by making the experiment with a bunch of grapes. It is well known that grape juice spoils very quickly, but if care is taken in expressing the juice not to let it touch the surface of the skin, it can then be kept in an air-tight vessel without changing. If it touches the surface of the skin it collects the fungus germs attached there, and soon ferments. The surface of a grape is especially adapted for retaining these small germs, for it is covered with numberless tiny drops of wax. Unfortunately, these mould fungi develop as well upon growing fruit and plants as upon those that have been picked, and frequently cause great destruction. It is to just such a formation on potatoes that we have given the name of potato-rot. In the grape blight these germs are attached to different parts of the surface, and send their delicate fibers in every direction, forming a net-work over the whole surface. The parts to which the fibers are fastened die, the skin loses its power of expansion and bursts, while the contents grows to about the size of the ripe grape. In the potato rot the mould begins on the surface of the leaves, but spreads through the entire mass with its thousands of fibers The lower forms of animal life—the so called infusoria—develop in decomposing matter in a manner very similar to these simple plant forms. If a glass of water, in which the stem of a plant or a piece of flesh is placed, is allowed to stand for some time and then examined with a microscope, it will be found to contain countless numbers of little animals, often so simply formed that nothing can be seen but an oval vesicle or a tiny fiber, which is in constant motion. A piece of flesh, if left exposed, soon has a covering of mould over its surface, while under this vast colonies of infusoria are at work penetrating the mass in all directions.

Similar creatures sometimes appear in living animals, and are the cause of a great many diseases. It is probable that all fever can be traced to this cause, since it is found most in places where the putrefaction of organic matter is constantly going on, as, for example, in river bottoms. A careful investigation of the gases which arise from putrefaction has proved that no part of the disease can be attributed to them. Of the various theories that have been advanced on this subject the most probable is that malaria owes its fatal influence upon bodies to the presence of microscopic forms of life. Cholera, also, probably results from fungus germs which are carried into the body either by drinking water or the air. These organisms, as well as the fungus germs which cause the destruction of the grape and potato, seem to spread periodically over the earth like a swarm of locusts. For this reason it will be very interesting to learn something of the way in which they are scattered by the air. This is very easy to do, since wherever moulds or infusoria are found germs of the same kind must have been supplied. If fruit juice which is known to be entirely free from any trace of life is placed in air which contains germs. mould, and with it fermentation, appear; if, on the contrary, there are no germs in the air, the juice will probably sour, but there will be no signs of life. With this fact in view, the French chemist, Pasteur, has contrived an ingenious instrument or ascertaining the proportion of such germs in the air. He encloses fruit juice, milk, or any other liquid liable to taint in a glass vessel, the neck of which he then draws out to a fine point in a glass-blower's lamp. The vessel is then kept in boiling water for a long time. The steam from the boiling liquid drives out all life, and if the vessel be hermetically sealed at once, when cool, there will be a vacuum above the contents. He then opens the point carefully, allows the surrounding air to rush in, and again seals it up. If, as is almost invariably the case, mould or infusoria appear, it is plain that the air last admitted supplied the germs. With this simple but effective apparatus Pasteur has examined the air in many widely-separated places.

He found these tiny forms of life in every part of Paris. This is not surprising, since the constant bustle of a large city would prevent them from settling. Only in the cellar of the observatory—a room fifty feet deep and very seldom entered—did he find no trace of life. Here the absolute stillness of the air from one year to another made it possible for all floating particles to find a resting place. In the country he obtained very various results. In some places the air would be entirely free, in others filled with germs. The upper strata of the air appear to be free from them, since bottles filled with air from Mount Rosa showed no trace of mould.

These germs, then, surround our earth like a cloud of vapor, but reach only a certain height, and would be deposited altogether as dust if the wind and the movements of men and animals did not always raise them again. It is not improbable that the healthful influence which sea and mountain air exert on the body is due to the absence of these minute particles.

In every walk in the open air there awaits us a thousand expressive indications of the process we have been describing. The ground of an unfrequented forest is covered with withered leaves. Removing the topmost, a brown mass is disclosed in which the form of the mouldering leaves and branches can scarcely be recognized. Every where there are traces of a busy life. Countless animals have their homes here; grubs and similar creatures are busy in destroying the remains of hard wood, while a whole world of infusoria follow in their track and change every thing into a scarcely perceptible dust. Upon the margins of streams, also, active life awaits us. Water animals, great and small, have sought retreats in the remains of plants, and thick beds of shells and remains of infusoria are evidences of innumerable generations that have begun and ended their lives here. All this life has now, to our eyes, a definite purpose. These millions of creatures are all engaged in the same work—the decomposition of plants. It is their activity that changes hard wood so quickly into a porous mass easily penetrated by the air, and which the oxygen of the same gradually converts into carbonic acid.

This process of mouldering is not important simply for the carbonic acid which it supplies. Just as valuable are the spongy, powdery constituents that remain on the ground. In these the root fibres spread in every direction, and from them receive the necessary moisture. They are, besides, the magazine in which the salts necessary for the growth of plants are stored. Very curious is the way in which these valuable substances are kept from the ground so that rains and spring floods cannot wash them away. A gradual change in the soil prevents the unlimited accumulation of them, however, or all carbonic acid would be taken from the atmosphere, and we would possess a thick layer of fruitful soil without being able to cultivate plants. As it is, a certain proportion is maintained between what is supplied and what used, and the amount of carbon in circulation remains about the same.

Our attention has until now been confined to the offices of dead vegetable and animal matter putrefying upon the surface of the earth; but we must now turn to that which, either by chance or as the result of habit, is buried in the earth or in the mud of streams. If the mud of any stagnant water be stirred with a stick, great bubbles of gas rise to the surface, which, when lighted, burn with a bluish flame. This gas has received the name of marsh gas, and consists of carbon and hydrogen. We can form some idea of its nature by thinking of a little system of five atoms—one of carbon and four of hydrogen. It is as simple in composition as carbonic acid, containing but one atom of carbon. The formation of this gas in the mud of ponds corresponds to that of carbonic acid upon the surface of the earth, the putrefaction of organic matter which has sunk into the soil under the water being the cause. But since there is no oxygen present to form carbonic acid, the hydrogen of the water takes up one atom of carbon and rises to the surface as marsh gas. There remains behind a black, powdery mud very similar to field soil, which, as the inundations of the Nile for thousands of years have shown, is an excellent fertilizer. Vegetable matter undergoes a similar change if covered over with earth. This has often happened during the changes of the earth's surface. There is reason to believe that carbonic acid and marsh gas represent the principal forms in which hydrogen and oxygen, respectively, are separated from wood during the process of its conversion into coal. This would account for the constant presence of marsh gas in the coal formations, where it is usually termed *fire damp.* This gas, when mixed with air, explodes with great violence, and burns also, as the mangled body of many an unfortunate miner who stepped with his lamp within its reach, has testified. It will be seen that putrefaction, whether carried on on the surface, under water, or in the centre of the earth, is chemically the same, but the brown or black mass (lignite or mineral coal) which results from the latter, is not powdery, but firm and adhesive. When brought to the surface it cannot be used as a fertilizer, and it is reserved for man to convert it into a substance necessary to vegetable life—carbonic acid.

That which nature accomplishes after thousands of years the chemist can imitate in a short time in his laboratory. Vegetable matter if heated in a vacuum does not burn, since the oxygen necessary for combustion is excluded, but is reduced to carburetted hydrogen (the same compound that results when putrefaction takes place in swamps or in the earth) and coal. In this way lignite and mineral coal are formed. They are the remains of plants which are not yet entirely decomposed, and hence contain both hydrogen and oxygen. By heating wood in a closed vessel—a process called destructive distillation—illuminating gas is formed, and in neighborhoods where wood is abundant it is used instead of coal for this purpose. By the same process acetic acid, creosote, and other products are separated in suitable condensing apparatus. If carbon only is desired the wood is burned in a heap, and the acid and creosote escape as vapors into the air. From the distillation of lignite and mineral coal, besides illuminating gas a great number of hydro-carbons are obtained, which are partly fluid, partly solid, and are used for illuminating and other purposes. The most important of these secondary products is benzole (benzine), which besides its own various uses yields nitro-benzole so much used in perfumery, and from which we obtain aniline, of which many of the most beautiful dyes are now prepared. The distillation of cannel coal at low temperature is now extensively carried on for the manufacture of paraffine, which is now employed as a substitute for wax in the manufacture of candles.

The introduction and extension of the manufacture of gas from lignite and mineral coal has occurred during the last half century, while nature has carried on a similar process on a stupendous scale for thousands of years. Places where combustible gases streamed from the earth were known to the ancients, who regarded them with great reverence. In Buku, on the Caspian Sea, there is to-day a tract of land so impregnated with carburetted hydrogen, that by inserting a pipe only a foot deep in the ground a large stream of marsh gas may be obtained. The natives worship this fire as a divine appearance, and make offerings to it, but at the same time are practical enongh to make use of it in the preparation of their food. Very recently places have been discovered both in Canada and Pennsylvania, where not only illuminating gas but petroleum flow from the earth in enormous quantities. Various causes have been assigned for this phenomenon. It is thought by some, that owing to the heat of the interior of the earth the coal beds are undergoing destructive distillation, the products of which rise through fissures in the overlying rocks. Another view is, that these substances are produced from organic matter that has never been transformed into coal. Both gas and oil, almost invariably in connection with salt water, collect in cavities in the rock, from which they are forced up by the pressure of the gas itself or are obtained by boring. The American petroleum contains a great number of hydro-carbons, from light marsh gas through the light to very heavy volatile oils. The presence of these in crude petroleum make it very dangerous, since when mixed with a certain amount of air they form an explosive mixture similar to fire-damp. Refined petroleum—such as is used for burning—has been freed from all its volatile constituents, and is much less dangerous to handle. From Baku we would without doubt succeed in condensing a large quantity of this oil, if the ignorance and cruelty of the natives, as well as the difficulties of transportation, did not stand in the way. When, however, the springs in North America have been exhausted, which, sooner or later, must happen, the enterprising spirit of our age will devise some way of reaching the treasure there, and the uncultivated desert will be covered with manufactories and railroads.

A great deal of attention has been given to petroleum of late, from the fact that its clear white light is better adapted than either rape-seed oil or wax tapers as a substitute for the light of day. Regarded scientifically it is worthy of still more notice. It is possible to produce, artificially, from marsh gas, a whole series of the hydro-carbon compounds which are contained in petroleum. Imagine, if you please, a vessel filled with marsh gas. We cannot distinguish it from ordinary air but to our fancy; it is a collection of systems, each of which is composed of one atom of carbon and four atoms of hydrogen. These systems are widely separated from each other, but by chemical means can be united. If we take from two of these systems one atom of hydrogen each, they will at once combine and form a new system, consisting of two atoms of carbon and six atoms of hydrogen. Proceeding in this way we can obtain compounds more and more complex, the atoms of carbon increasing to eight, sixteen, thirty-two, and so on, with a corresponding increase in hydrogen atoms. These are the hydro carbons that exist in petroleum.

Thus simply by a different arrangement of the atoms of carbon and hydrogen, all the hydro-carbon compounds known to chemists are produced. By the addition of oxygen we get the alcohols, acids, sugars, fats, etc.

This process corresponds throughout to that which nature herself follows in the formation of plant constituents, and in this way science is enabled to continue by very different means the processes which are carried on so mysteriously in the bodies of plants.

Carbon, from the moment that it enters into the organism of the plant, passes through a series of changes of the same purport. The simple structure of carbonic acid becomes more complex in the various substances formed in plants. The putrefaction of these leaves the carbon more intimately connected, while in coal it forms its closest compound, and is almost pure. Then, through the action of the atmosphere, and the agency of men and animals, the descent of the scale is begun. The chemistry of animal life is eminently destructive. The animal, fed with compounds of the most complex character, completes this kaleidoscopic series by converting them, for the most part, into the very materials with which the constructive work of the plant commenced—freeing the carbonic acid to begin again its course through life and death to life again.

MICROSCOPICAL FUNGI INFESTING OUR CEREALS.

BY PROF. WM. BARBECK.

The following was read before a meeting of the Pennsylvania State Board of Agriculture, June 5, 1879:

I. Ergot.—In examining a rye field about harvest time we may be pretty sure to find some plants in which (although the ears, with their bracts or glumes, are apparently developed in a normal way) some of the grains have attained an abnormal size, and are of a somewhat blackish color. We have here what is generally known as "*Ergot*" (botanically *Claviceps purpurea*, Tul.), a fungus which is to be found almost exclusively on rye, and which, because of its poisonous effects on animal organisms, is dreaded, particularly in those parts of northern Europe where rye bread forms the staple daily food.

This fungus shows three distinct stages of development, two of which were well known to former botanists, but were described as separate species belonging to entirely different genera. It is to Tulsane that we owe the discovery of their immediate connection and succession.

Towards June, when the sexual parts have been differentiated, we see a mucous, honey-like substance flowing from out of the bracts of the ear. In examining this "honey-dew" (as it is called by farmers) under a microscope of high power, we behold it swarming with millions of minute oval spores, or conidia, which, upon further examination, we find to issue from a tender but complicated mycelium which penetrates the ovary, gradually transforming into a soft, whitish body of an oblong shape, with shriveled surface. In this form our fungus was described and recorded by Leveillé as *Spacelia segetum*.

In the course of a few weeks the gelatinous membranes of the mycelium threads harden and assume a brownish color. Thus the originally soft tissue is transformed into a body of a corky or horny consistence. We have now the so called "ergot grain," or the second stage of development of our fungus, formerly described as *Sclerotium clavus*, Tode, and recognized as a good species among the Dermatomycetes. At the top of the "ergot grain" we behold the dried and shriveled remains of the *Spacelia* as a sort of hood of a dark-yellowish or brownish color.

In this form of Sclerotium the "ergot grains," most of which, of course, fall out of the ears when the corn is taken from the field, remain on the ground unchanged through the winter.

In April of the next year the third and very interesting form, which by its discoverer, Tulsane, had been termed *Claviceps purpurea*, is developed. We behold a number of purplish carpophores, each ending in a yellowish head, growing out of the Sclerotium. Each of these little heads shows in longitudinal sections a row of regularly shaped and arranged peridia. These peridia are filled with a number of asci containing the very minute and thread-like spores. Direct experiments made by Prof. Kuehn, of Halle, and other mycologists, have proved beyond doubt that when these spores are sown into healthy young blossoms of rye they will in a short time produce the mycelium of *Sphacelia*. The same result is sure to be obtained by means of the conidia of the honey-dew, which in a comparatively short time will infect other perfectly healthy ears, and will even carry the disease over to other surrounding plants, such as several species of grass, etc.

Thus we have to regard the *Claviceps* spores as originating the disease in spring; the *Sphacelia* as propagating it during the period of fructification, and the *Sclerotium* as preserving the contagion through the winter.

It is generally known that the ergot, when brought into human organism, operates as a narcotic poison. In certain years which were particularly favorable to its development, numerous cases of poisoning have been observed in Europe, and so we learn of a series of ergot epidemics recorded in official European statistics. In 1771, for instance, the disease was so acute in Westphalia and Hanover that in certain villages more than ninety per cent. of the cases proved fatal.

The parasite has acquired its German name "Mutterkorn," because of its contracting effects upon the uterus, owing to which it has become an efficient aid in obstetrics, well known under the old name of *Secale cornutum*.

The ergot in its *sphacelia* form is, as mentioned before, not confined exclusively to rye, but its conidia infect several species of grass, such as lolium, bromus, dactylis, and others. Thus a number of diseases befalling our domestic animals are most probably to be ascribed to the "honey-dew" which the animals have eaten with such infected grasses. Of course the farmer ought to remove the infected plants growing in the neighborhood of his rye fields. He ought to pick out the ergot grains as much as possible before the corn is mown, and as they are only formed during the short period of fructification, he has to apply such methods of cultivating his ground (particularly the drilling) as tend to obtain a possibly simultaneous development of the fruits, thus reducing the dangerous period to a possibly short time.

II. Smuts.—The ustilagineæ, or smuts, are parasitic fungi whose fine-threaded, wide-spreading mycelium grows through large portions of the infected plants. They fructificate, however, only in certain parts of these plants and at certain periods. In such proper places the threads of the micelium increase rapidly, resorbing the surrounding tissue. Their free ends become articulated into cells; the latter, after being separated, are surroundedd by a second membrane, and thus transformed into spores. These spores occupy as a brownish dust or powder the place of the destroyed tissue, and are set free, in a measure, as the infected parts decay.

The organs of the plant in which these fungi are fructificating vary according to the species of smut. So we see the whole panicle of oat infected by *Ustilago carbo*, or "*oat-smut*;" the interior of the wheat grains by *Tilletia caries*, or "*bunt;*" the anthens of sethens of several sileneæ by *Usilago antherarum*, and the female cobs of our maize by *Ustilago maydis*, or *maize-smut*. When in any of these ustilagineæ the spores are being formed, the threads of the mycelium become dissolved and disappear; consequently when the smut is fully developed we will find nothing but the afore-mentioned spores.

Numerous experiment have shown that these spores maintain their power of germination for several years. When brought on a moist substratum they produce, within a few days, a germ tube or promycelium on which minute sporidia of various shapes, according to the various species of smut, are formed. According to the observations of Hoffmann, Kühn, and other eminent botanists, these sporidia penetrate the epidermis of young and tender corn-stalks, mostly in the region between the root and the first joint of the stem. The mycelium grows in an upward direction, following the course of the longitudinal cells. However, the growth of the plant seems not to be injured; on the contrary, the infected plants are apparently of a more fresh and bluish green, and it is not before the time of fructification that the devastation becomes visible.

The process of germinating is very nearly the same in the oat and maize smut, whereas the "bunt," or *Tilletia caries*, shows some interesting peculiarities. In this parasite, which is to be found exclusively within wheat grains, the sporidia are produced in a verticillate manner from the germ tube. They are repeatedly anastomose, and this anastomosis, or conjunction, is considered as an act of fructification, for immediately afterwards we see that oospores are formed, from which very minute threads are sent forth which become free and carry the disease over to other wheat plants.

It requires an experienced eye to discover the bunt in any wheat field, for the infected ears are not distinguished in their outer appearance from the healthy ones. The diseased grains, however, when rubbed between the fingers, burst at the slightest pressure, and we see that, instead of the white meal, they are filled up with a dark smutty mass, which is distinguished by a nauseous smell resembling herring brine, produced by a volatile oil, the trimethylamine, which is also to be found in herrings.

However destructive all these smuts may be, it is within the power of any farmer, if not to prevent, at least to limit their excessive increase. The spores have been found adhering in large numbers to the grains which are harvested, and which, of course, when sown in spring will transmit the contagion to the next crop. Now a solution of blue-vitriol, which is not hurtful to the seeds, is sure to kill the dangerous spores, and so we have an efficacious and at the same time cheap preventive remedy on hand.

III. Rusts and Brands.—The parasites of the hitherto described species we have found to be destructive to the several organs of fructification. The following fungi belong to an entirely different genus. They infest and destroy the stem as well as the leaves and vaginæ of our gramineæ and other cultivated plants, and are generally known under the name of rusts and brands, or *uredineæ.*

In examining our corn-fields in the beginning of summer, we will most likely find a number of plants covered all over with bright rusty (later in the year with dark brownish) spots and lines. These pustules are produced by parasitic fungi which have their seat under the epidermis of the infected plants, and after being developed, burst through the epidermis in order to disseminate their spores. The very interesting development of these uredinæ is a comparatively recent discovery, the more interesting as the originators of the disease are to be found on plants belonging to families entirely different from those in which the parasites are developed.

If in May or June we examine the leaves of some berberideæ, rhamnaceæ, or asperifoliaceæ, growing in the neighborhood of our corn-fields (particularly those in damp localities), we may be pretty sure to find the under surface of such leaves covered all over with little cup or jar-like bodies of a bright-rusty color. These little cups are what have long since been known as *cluster-cups*, or *æcidium.* They present an elegant object under the microscope, and tender sections will show that the interior of the cups is crowded with basidia, from which regular rows of bright-colored spores proceed. (These cluster-cups are generally attended by numbers of those strange little bodies known as spermogonia, growing mostly from out of the opposite side of the leaf, and sending forth thread-like spermatia, the real nature of which has as yet not been ascertained.)

Prof. de Bary, in Strasburg, has been the first to show that when these æcidium spores are brought on certain species of corn (for instance, those of *berberis*, or barberry, on rye), they immediately begin to germinate. The tender germ tubes force their way through the stomata, and rapidly develop within the infected leaf a mycelium, from which the afore-mentioned spores are produced on basidia beneath the epidermis. Prof. de Bary was led to the investigation by the pertinacious and often ridiculed assertion of old farmers, that the shrubs of barberry were injurious to rye and oats; and, indeed, his repeated direct experiments, as well as those of a number of other botanists, have proved beyond doubt that a very dangerous form of rust, the *Uredo linearis*, is produced only by the spores of barberry cluster-cups. In the same way it has been shown that other rust diseases, for instance such as are produced by *Uredo rubigo vera*, which also destroys our cereal plants, are origuated by certain cluster-cups grown on other plants in the neighborhood of corn-fields.

If we examine the rust-pustules more closely, either by opening them with a needle or by making thin sections, we will find beneath the epidermis and growing on short peduncles, numerous yellowish spores. They represent simple oval cells, the protoplasms of which contain little drops of an orange-colored oil. The hyaline episporium is granulated and shows several translucent spots. the places from which the germ tubes will proceed. These germ tubes are rapidly developed, often within a few hours. They penetrate the stomata of other leaves and repeat the production, first of a mycelium, then of numerous spores, which again pierce with their germs through the epidermis of other plants. In this way the process is continued through the course of summer, and it is easily explainable that under favorable circumstances the disease may be propagated from field to field, over vast tracts of land, assuming quite an epidemic character.

Towards the close of the hot season we see our fungi entering a new stage of their development. Repeated examinations of the rusty pustules will show that the latter are gradually transformed into bodies of a dark-brownish color. Let us examine these dark bodies a little closer. We will find that from the former mycelium spores of a quite different shape and color have been produced. The uredo or summer spores have disappeared, and in their place we behold numerous dark-brownish two-celled spores, with thick or perfectly smooth membranes growing on long pedicles. They are what is known as *brand* (*puccinia*), and were formerly described as an autonomous species of fungi. In reality they are the winter or teleuto spores of the rust. The spores remain with their peduncles attached to their stroma during the winter, and do not begin their germination before the following spring. Then one or several germ tubes are formed, which at their upper extremities become segmented into several cells. From each of these cells we see growing out a very fine thread, producing a sporidium. These sporidia are set free and are scattered by the wind, and when brought on the leaves of barberry, are sure to produce the cluster-cups first described. (The latter fact has again been proved by numerous direct experiments.)

Thus we see the æcidium producing uredo, the uredo puccinia, and the puccinia again æcidium, and we have the interesting fact that fungi of an apparently unlike structure, which have been hitherto described as belonging to different genera, and which are actually to be found on entirely different plants, are in reality but successive forms of development of the same parasite.

By this discovery of De Bary the attention of a number of mycologists was directed to other species of rusts. Numerous experiments have been made, and thus the connection of a number of hitherto separated forms has been found out. We know, for instance, that one species of uredo, *U. straminis*, which destroys the glumes and attacks the ovaries of wheat ears, and which in 1862, in Denmark, caused a damage of nearly a million of dollars, has its æcidium form on the several boragineæ; that a disease on pear trees, destructive to the young leaves and ovaries, and known as *Ræstelia cancelletta*, is the æcidium form of a uredo growing in early spring on Juniperus, and hitherto described as gymnosporangium.

In some rusts the winter spores present a form at the same time very elegant and quite different from puccinia. So we see toward autumn the under surface of blackberry and rose leaves spotted all over with blackish, powdery tufts of the so-called blackberry brand or phragmidium. These tufts are composed of four or five-celled elegantly granulated spores, produced on long hyaline peduncles. In the same places where we find them now we would have met a month ago the one-celled uredo spores, and it is quite interesting to observe under a lens from day to day how (beginning at the circumference and moving toward the center) the dark winter spores are gradually superseding those of uredo. This connection has also been discovered but recently.

In the same way the dimorphism of several other rusts and brands has been defined. However, we are as yet ignorant as to the development of a good many other species, and there is consequently a vast and at the same time highly interesting field left for further investigation.

IV. Mildew.—"Mildew," says M. C. Cooke in his Parasitic Fungi, "is one of those loose terms which represent no definite idea, or a different one to different individuals." It may be so in England. American farmers, however, as well as horticulturists of my acquaintance, unanimously apply the term to the several species of *erysiphe*, and so I understand under the name of "mildew" the mycelium of a parasitic fungus, which, sometimes very thin and cob-web like, sometimes in a thick, felty layer, disturbs the development of the infected plant, particularly by obstructing the stomata, perhaps also by drawing its nourishment from out of the infected organs by means of little wart-like processes, through which the mycelium is attached to the plant on which it feeds.

Among the great many varieties of *erysiphe*, which are to be found on the leaves of different trees as well as on a great many ornamental and useful plants, we have to deal here with one species, *E. graminis*, which in certain years is to be found in abundance, covering the leaves of the several cereals.

The real nature of this parasite has likewise but recently been discovered, and it requires a good microscope to discern the minute organs of fructification.

Soon after the formation of the "mildew" has commenced, we see some of the mycelium threads growing upwards in a vertical direction. These threads become segmented into several cells, each of these oval cells is separated in the same way as we have seen in sphacelia, is transformed into a conidium, and by means of these conidia, the mycelium is propagated during the summer months with incredible rapidity under favorable conditions.

Towards the close of the period of the growth of vegetation we see that, in a quite interesting way, peridia are formed by means of a sexual process.

In the crossing point of two mycelium threads two cells of a somewhat unlike shape are differentiated. The larger one, issuing from the inferior hypha, is club shaped. It is (according to De Bary, to whom we are indebted for very careful investigations upon this subject) the female "ascogonium," as he terms it, against which the much thinner "pollinarium" (growing up from the inferior hypha) leans closely. The contents of the pollinarium being absorbed by the female organ, the latter begins to swell or enlarge as the pollinarium disappears. In the mean time a number of secondary threads are developed at the basis of the ascogonium. These threads surround and enclose the ascogonium, producing numerous lateral as well as inward growing ramifications. The lateral threads weave themselves into a compact tissue which afterwards hardens, becomes brownish and forms the outer coat of a peridium, while the space between this coat and the ascogonium is filled up by the loose tissue of the inner ramifications.

The ascogonium is divided by repeated partition into a number of asci, each of which in our species contains eight spores. According to the observations of several botanists these spores are not developed before the next spring, so that the parasite is preserved through the winter by means of the peridia. In most species of *erysiphe* these peridia are provided with hyaline appendages, some of which are of wonderful regularity and elegance of form when seen under the microscope.

DISEASES OF SHEEP.

The following report on the Diseases of Sheep was read before the Wool Growers and Sheep Breeders' Association, by Andrew McFarland:

This subject is so extensive, demanding so many considerations that we can scarcely hope to gratify the members of this Association, or sheep breeders generally, by the meagre descriptions which we can give of the diseases which we know to affect our sheep. The best we promise to give is some of our ideas of the diseases incident to our Merino sheep, for we do not claim to be familiar with the coarse or long wooled breeds of sheep, and consequently may not be competent to describe diseases incident to them, which, possibly, do not affect the Merinos.

Constitutional or hereditary diseases are, perhaps, much more common than most persons suspect, and results from injudicious management in breeding from ewes too old, or rams too old, or either or both, or from those either old or young, having a diathesis which eventually becomes manifest, either in their immediate or remote progeny. We have known ewes eighteen years old, and rams fourteen years, and, although such great age is indicative of a good constitution, yet their power to impart healthy qualities to their offspring must necessarily have been impaired, in some degree, before arriving at such ages. Youatt says: "The best English flock-masters fattened and sold off their ewes at four, or at most, at five years old." The celebrated Mr. Ellman, of England, thought an old ewe would bring a large lamb, yet such a lamb will not, generally, make a large or fine sheep. It will be remembered these English sheep were not Merinos, but were the basis of what we call middle or long wooled sheep.

Constitutional diseases may, and doubtless often do, result from carelessness or bad management of stock, especially of young stock, in the way of stinting the lambs, or older sheep during that period which nature has assigned for development. But overfeeding, as well as stinting, may be detrimental to proper development. A proper quantity of healthful, nutritious food, and a healthy locality, are conditions necessary to avoid constitutional defects and to secure their exemption in their progeny. The Merino sheep are longer lived than any other breed, and may, perhaps, be used as breeders successfully for three or four times as many years as the Leicesters, the Downs, or the Cotswolds, according to statements made by the breeders of such sheep, and yet they require a greater quantity of food in proportion to their size, and, as a result, may be more liable to such diseases from such neglect. Although we are not versed in veterinary science, yet our experience taught us some things, of which we may write in our own plain style, which we hope will be found to be very different from the style of veterinary writers in some of our papers, who appear to us to be determined that the common reader shall not understand their prescriptions for we, at least, would as soon undertake to translate the Hebrew Bible as to decipher the recipes of veterinary M.D.'s. We have assumed that the Association did not expect us to diagnose, or to write on diseases, but that it expects us to give our ideas of the best remedies for such ailments. Constitutional diseases may have so many combinations that we do not think proper to enter into any specific examination or description of them further than to say that the lungs and liver are very apt to be affected in the same animal at the same time, and that *hydrocephalus* (or water in the head) is, most probably, in most cases, a result of liver affection, as is also dropsy, as manifested by a collection of water under the jaws. The lung disease is shown by the hacking cough—that of the liver by yellowness of the skin and the white of the eyes, and combined or singly, diarrhœa or scours is generally a result, and the remedy, dose freely with pine tar, making the sheep swallow a table spoonful daily until the disease be checked. Water in the head is manifested best a short time after the lamb is dropped (thus showing hereditary disease) a failing appetite, or, in some cases, a voracious appetite for a time and then the opposite, in some cases relaxed bowels, and in others constipated, but in either case dullness, stupidity, and weakness follows, and it staggers and pines gradually to a mere skeleton, and dies before it is a month old, and as to a remedy for this disease we can only say, we don't know any.

Hydatids or blabs, are parasitic animals, generally pear-shaped, like a bladder full of water, and cause diseases of the brain, such as sturdy, dizzy or staggers. The symptoms of diseased liver is plain in these affections, and they run round and round, eventually becoming blind, emaciated, exhausted; and we do not believe it worth while to attempt to cure such a sheep, but trepanning—taking off the top of the head and removing the hydatids might save it. Erysipelas has been termed a "skin disease" by veterinary surgeons, but we believe it to be a *blood disease*—that the blood is very much vitiated often before any external manifestations, which is by biting and rubbing the affected part when a watery humor exudes and causes the disease to spread rapidly. A strong solution of sal ammonniac, applied externally, and using sulphur and cream of tartar plentifully in the sheep's food, is the best remedy so far as I know. Liver-rot is a constitutional disease, and is manifested, as described above, under the head of "diseased liver," with the additional symptom of presence of fluke-worms (*Distoma hepaticum*) in great numbers, in the liver especially. We believe this disease is sometimes induced by keeping sheep on wet or marshy pastures, and that the lambs or ewes so affected will have this diathetic taint. But whether the fluke-worm has been found in the stomach of the sheep, or on the grass, or water, or herbage where such animals had not been previously grazing, with us is a question of importance. We think that the diseased liver is not caused by the fluke-worm, yet we do believe that the fluke-worm is propagated in the diseased liver, but how they got into the liver to commence propagation is as far beyond our comprehension as are the facts that worms have been found in the kidneys, liver, eye, lungs, brain, etc., of the human animal; or that five different kinds of worms are frequently found in the human stomach and bowels. We think that similar worms are found in swine, and we know that hogs which had been used to drinking soap-suds were entirely free from worms of any kind. We know that the tape-worm has been found in many other than the human animal. And the (*tricocephalus dispar*) or long thread-worm, the (*Oxyuries vermicularis*) maw, or thread-worm, usually called *ascarides*, and the (*Ascaris lumbricoides*), or large, round worm, are so nearly like some of those described by others, and those we ourselves have seen in both sheep and hogs, that we are inclined to the opinion that they are propagated in a similar way in the different animals, but to tell *how it is done* we fully confess we can not.

We believe that strong wood ashes used freely in the food will not only prevent their propagation, but also tend to destroy those already propagated. Common salt with the ashes has been regarded as a cure for liver rot. The scab is a skin disease, and may be produced by bad keep, exposure to cold and wet weather, yet the more common cause is by contact, and hence we call it a contagious disease; which is manifested by restlessness, biting of its wool and skin, rubbing its shoulders and back where scales form.

The itching is caused by an insect, a species of acarus, as the itch is caused by an insect of the same genus in the human race. A remedy that we know to have been effectual is, after shearing closely, to dip them in a decoction of tobacco, one pound to four gallons of water, in which the tobacco is to be thoroughly boiled, then add the same quantity of lime water, and one pint of spirits of turpentine. This liquid may be used in the fall or winter by opening the fleece in such a way that by pouring the liquid through a quill the whole body of the sheep may be saturated.

THE SCREW WORM,

Although not troubling the sheep in this region to our knowledge, having received information in regard to this pest from a gentleman who has had experience with it in Texas, it may not be amiss to publish his statement as corroborated by the press: "This worm is a great pest to man and beast in Texas, and especially to sheep. It, like the maggot and grub in the sheep's head, is the offspring of a fly, which deposits the larvæ, or eggs, on any part of the body, or thing, where they can find blood, of which they seem to be very fond, and as soon as the chrysalis or shell is bursted, or the worm is hatched, it begins its work of destruction by boring into the skin or body; that if in shearing the sheep any clip of the shears brought blood, the blood had to be covered with tar, or the sheep would be killed in a few days by these worms. Hogs, cattle, mules, and horses are all treated to a dose of good pine tar as soon as possible after blood be drawn by any means. The trouble is gradually becoming worse and worse every year, and most likely that fine grazing region will necessarily be abandoned as a herding place for either cattle or sheep, yet it is possible that both cattle and sheep may be kept in small flocks, so that each animal in the flock may be closely observed each day during the season in which there is greatest danger." This is as nearly the substance of what the gentleman told us last March as we can recollect, and the corroborative evidence referred to is from the Steubenville *Herald*, November 15, 1878, copied from the Dallas (Texas) *Intelligencer*, under the heading of "The Terrible Screw Worm," and is as follows: "Mr. Samuel Myers is now lying bedfast in this place, afflicted with that terrible malady, the screw worm. Mr. Myers has been sick of late with fever, and on Monday last, while resting on his bed, one of the flies alighted on his nostrils. It requires but a few moments for one of these flies to deposit hundreds of eggs, which are hatched and grown inside of an hour, many of them as much as one-half inch in length. Mr. Myers, upon awaking, felt a slight tickling in the nose, and it was not until his eyes and face had become fearfully swollen that the physician discovered the presence of the worms. The only known remedy was applied—calomel and carbolic acid by injection into the nostrils. At first a few would drop their hold and force themselves out. Application after application was made with like result up to last night, at which time one hundred and fifty-two was the number passed. The patient is in a critical condition, with but slight hopes of recovery. The fly is much dreaded by our stock men, and is represented as a dark colored and fuzzy insect, which attacks cattle or any other animal that is unfortunate enough to have blood upon which they can alight. Although we do not know of any screw worms in this region, yet it is only a few years since the Colorado beetle was unknown here, and this pesty fly may also give us an unwelcome visit. Doubtless this fly belongs to the same genus as the *Œestrus bovis*, or gad fly, which deposits its larvæ on the backs of cattle, from which what are commonly called warbles are hatched, and also, the fly from which the common maggot, the grub in the sheep's head, and the bot in the horse's stomach, are each the progeny of different species of the same genus. Application of pine tar to the nose of the sheep is a preventive of destruction by the grub by keeping the fly away.

PAPER SKIN.

The disease called paper skin is possibly the same that Spooner and Hogg called pinning. Mr. Hogg, the "Ettrick Shepherd," as quoted by Randall in the *American Shepherd,* says the distemper is a strange one, it may affect a whole flock at once. The first symptom to the practiced eye is lassitude of motion and a heaviness about the eye indicating feeble action, and when dead there is found but little blood in the carcass, and even the ventricles of the heart become as dry and as pale as its skin. As the disease proceeds the hair of the animal's face becomes dry, the wool assumes a bluish cast, and if the shepherd has not the means of changing the pasture, all those affected will fall in the course of a month.

WORMS.

Mr. Spooner, under the heading of "Worms," says: "Mr. Copman, of Suffolk (England), found fifty lambs laboring under diarrhœa. On examining some which died, he found large patches of inflammation on the villous membrane of the fourth stomach. The small intestines contained thousands of tape worms *(Tœnia plicata),* and about twenty-five of the large round worms *(Ascarus lumbricoides),* with a large quantity of sand." Now we are rather inclined to the opinion that the afflictions of the flocks thus described, and that modern disease called paper skin, is one and the same, in different degrees of virulence, and the remedy is change to high, dry pasture, with plenty of good, clear water, and a plentiful use of wood or cob ashes, with salt in oats and bran, and we regard this prescription as a preventive of paper skin caused by worms, yet anemia or a lack of blood may result from other causes than worms, which we will attempt to describe here.

STRETCHES.

The disease called stretches, is manifested by alternate frequent stretching and laying down of the sheep, and its refusal to eat or ruminate, until it be relieved of its constipation, which is the cause of these actions. A remedy is an ounce dose of epsom salts, or common salt dissolved in water.

LAMB CHOLERA.

The disease called Lamb Cholera is not a new disease, as many have supposed, but is an old disease with a new name. Youatt describes coagulation of the milk, saying, "the farmer likes to see his lambs growing fat, but it is possible to make more haste than good speed." The lamb may have excess of nutriment, and particularly of its mother's milk. When a lamb thrives at an extraordinary rate, the bag of the mother should be examined, and if it is too large and full, it will be prudent to milk away daily a little of its contents, otherwise the yet weak stomach of the lamb may have more coagulated milk in it than it can digest. All the milk that is swallowed by the young lamb coagulates in the stomach, and it it accumulates too fast the stomach will become perfectly choked with it, and the lamb will be destroyed. In this disease there is often apparent purging, of a light color, which is in fact the whey passing off, whilst the curd accumulates, and produces obstinate constipation. The first thing to be done is to administer an alkali to dissolve the mass, such as magnesia, in doses of half an ounce, twice a day, after which two to four drachms of epsom salts, with a little ginger dissolved in warm water, and the warm water often repeated, is necessary, by means of a stomach-pump. It will be observed that in the above Youatt does not say anything about spasms, but we think all the other symptoms are mentioned.

PINNING.

This is another disease of lambs, which Randall calls pinning, and is known by a large accumulation of very adhesive excrement under and about the tail, closing the passage from the bowels. The treatment for such case is to remove the filth, and then apply fine coal ashes or fine dry dust, and give the lamb a half teaspoonful of salt in a sufficiency of water to dissolve it.

SHEEP-TICK.

When we write on the pest called sheep-tick, we do not wish to be understood as considering this pest as a disease; but we know that the ticks suck the blood from the animal, and not only the blood, but the life. As to how this pest originates in a flock, we do not know, but we know they increase rapidly when they get the chance to propagate, unless means be used to destroy them. Giving the sheep flour of sulphur tends both to prevent and to banish them; but dipping the sheep into a decoction of tobacco, or sprinkling Scotch snuff on the skin after the wool be opened in a streak from the ears to the points of the shoulders, and along the sides to the coupling of the hindquarters, and thence to the tail, using a pepper-box for sprinkling the snuff. This can be done in the winter season, when dipping is not pleasant work.

FOOT-ROT.

Foot-rot is the last disease of which we purpose now to write, and while we know that many of our sheep-breeders are as well acquainted with it as we are, yet we think that there are many who perhaps are not, and there are others who think their sheep have had a little touch of the scald; but they are entirely ignorant of foot-rot, for theirs never had it, nor they would not have it for any consideration. The scald, as it is called, is only the first visible symptoms of foot-rot. This disease is regarded by some persons as being hereditary; but this theory is controverted by the fact that a cure can be affected by application of remedies to the feet alone. Others think it contagious; that if a sound sheep should inhale the breath of one that has the foot-rot, the sound sheep would be instantly tainted, and its feet would become sore from that cause. We think such theories are vagaries, and will let them pass. We believe it to be contagious by means of the virus, or poisonous matter from sore feet, coming in contact with others, and yet we know that some sheep have remained sound for years while kept in the same flock with others, some of which at times were very sore. Sheep are not predisposed to foot-rot. We believe the disease is usually confined to the feet, except when maggots hatched in the feet, crawl from them to the body while the sheep is lying down.

Although we regard it as contagious yet we also regard it as a production from tall grass on marshy or wet pasturage, when the sheep's feet are almost constantly wet, having no dry or dusty stamping ground; while they are perhaps fed on corn, which, with the other causes, tend to produce the disease; which is manifested by a scalded-like appearance of feet, when the sheep begins to limp or move stiffly. The foot is feverish, having a watery exudation from the junction of the flesh and hoof in the cleft (what some designate as scald). Then the heels are apt to become still more feverish, and the watery exudation increases in quantity as well as in virulence, until it results in a discharge of pussy matter from cracks between the horn of the hoof and the fleshy part of the foot. This discharge continues, and the process of separation continues in its natural course until the entire hoof is ready to drop off. And often when sheep have been affected with it for a long time, the heels will become much enlarged by mattery tumors. In all the various stages of this disease, from the scald to the dropping off of the hoof, during the summer season the maggots are liable to assist the disease in the destruction of the sheep, and yet a cure is more easily affected just after they have cleaned out the purulent matter and decayed hoof. To cure this disease, the part of the hoof separated from the fleshy part of the foot should be cut away, drawing as little blood as possible; cleanse the sore, and apply to it a small quality of a mixture of red lead (duetoxide of lead) and blue vitriol (sulphate of copper), pulverized, in equal quantities by weight, adding enough nitric acid to the powders to make the consistency of thick paint wh n mixed; and ordinarily three applications within two weeks will banish the disease, without even changing the sheep to new pasture. The sheep should be kept dry—from rain or dew—for at least twenty-four hours after being doctored.

WHEN SHOULD WHEAT BE CUT?

BY PROF. N. S. TOWNSHEND.

At the State University, last year, examinations with the microscope were daily made upon the ripening wheat to ascertain whether the starch and gluten are formed in the kernel simultaneously. These examinations showed that the full complement of starch may be deposited in the kernel some days in advance of the full complement of gluten; and, therefore, that it is possible to cut wheat at such a stage of ripeness as to secure all the starch in a large, plump kernel which contains comparatively little gluten. The importance of the gluten is so great that its relative proportion largely controls the price of flour in the eastern markets, and consequently it affects wheat-growers in Ohio to the extent of millions of dollars annually. A report of these investigations was handed to Mr. Klippart for the Ohio Agricultural Report of last year, but it was then too late to prepare the diagrams which he thought desirable for the illustration of the subject. The present season (1879) similar observations have been made upon a much larger number of varieties, and with substantially the same results. Experiments made in England some years since were supposed to prove that wheat cut several days before the kernel had become hard and dry made better and more flour than was made from similar wheat cut later. But experiments made where the climate is so cool and moist that wheat does not ripen until August are not applicable to Ohio, where the ripening process is much more rapid.

For the purpose of human food the most valuable constituents of a grain of wheat are starch and gluten. Starch may constitute from fifty to sixty per cent. of the kernel. It is one of the commonest and most important articles of food. Gluten is more nutritious than starch, its composition being more nearly like that of animal substances; but it is found in the wheat kernel in much less quantity than the starch. In Ohio wheats it may amount to ten or possibly to fifteen per cent. of the kernel; in dryer climates the proportion is greater. In addition to the value of gluten as food, it has properties which make it especially valuable, in combination with starch, for making bread. It forms, with water, a most tenacious paste, and when fermentation or chemical action is set up in the dough this paste forms a thin pellicle about the bubbles of carbonic acid gas as they are produced, and retains them. The retention of the gas causes the dough to expand, or rise, so that when baked in this condition the bread comes from the oven thoroughly vesicular or light. A flour exclusively of starch, or containing insufficient gluten, will not retain the gas, and consequently does not rise; the more gluten there is in the flour the more perfectly the dough rises and the lighter and better the bread. Flour from soft wheats which contain abundance of starch, but are deficient in gluten, command but a low price in the eastern market; while flour from flinty wheat, which is more glutenous and strong enough to raise itself, not only, but possibly, a mixture of cheaper flour and a good quantity of water, is in good demand, and at higher prices.

A kernel of wheat, to ordinary inspection, consists of the outer covering or bran, the interior or starchy portion, and the chit or embryo. A section across a ripe kernel, under the compound microscope, shows that the bran consists of five layers or coats; the fourth from without is that which gives to any variety its special color. Next to the inner surface of the bran is a layer of regularly-formed cells which contain the gluten, and a large part of the phosphates; interior to the gluten cells are the larger but irregularly-formed starch cells, containing starch granules. If the section be wet with amonio-sulphate of copper a green color is given to the gluten cells, without changing the starch; then a solution of iodine will turn the starch blue, without affecting the gluten, so that both are readily distinguished (see fig. 1). A section of the kernel, made when the grain is still in the milk, will show starch cells containing granules, but the gluten cells are scarcely distinguishable (see fig. 2). When the wheat has passed into the doughy stage the starch granules crowd the cells, while the gluten cells are small, irregular, and at intervals (see fig. 3). When the wheat is considered ripe, the straw yellow, the heads bent over, and the kernel too tough to break between the thumb and finger, the starch cells remain full, and the gluten cells then make an even row of square cells between the bran and the starch (see fig. 1). If, however, the gluten cells are entirely full, and the kernel is perhaps shrunken a little from the drying of the starch, then the gluten cells, by lateral compression, are forced out of square, and their radial axis is longer, as seen in fig. 4.

Fig. 1.

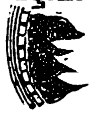


Fig. 2.

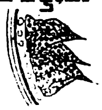


Fig. 3.

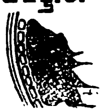
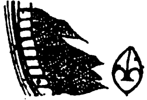


Fig. 4.



The yellow color of the straw, and the turning down of the head, are not always reliable indications of the stage of ripeness, except as regards particular varieties. The Clawson, which has a long and rather loose head, bends over earlier than other varieties which have the head more compact. There is also a difference depending on the peculiarities of the season: if the weather be very hot and dry, the straw will change before the grain is well filled; while in a cool and moist season the grain fills before the desiccation of the straw. Many persons are induced to cut soft wheats too soon, because the kernel may remain large and plump, which is due to the fact that starch does not readily give up all its moisture. Wheats that contain a large amount of gluten are apt to appear shrunken, even when cut later, because the gluten readily yields up its moisture, and contracts in so doing. Probably some are induced to cut wheat too early from the supposition that wheat, like corn, ripens in the shock. Repeated examinations have failed to show any increase either of starch or gluten from day to day after cutting. The only rule we can suggest which applies equally to all varieties is this: delay the cutting as long as is compatible with avoiding waste in handling. Some varieties of wheat have a light and open chaff, and obviously require cutting earlier than others.

Early cut wheat doubtless makes the whitest flour, but for reasons already stated, it does not make the best bread; and by our early cutting we increase the inferiority of Ohio flour in comparison with that of Minnesota, which usually brings from one-fourth to one-third more in New York. Ought there not at once to be a united effort on the part of Ohio wheat-growers to improve the quality and market reputation of Ohio flour? Next to allowing wheat to grow until it is ripe, we might recommend the abandonment of the starchy, soft wheats, and the selection of the more flinty varieties, like the old red Mediterranean. The quality of our wheat might be improved, if this crop were sown only upon sound, dry land; probably the more underdraining, the better the wheat. A change in harvesting usages is also required in some sections. Instead of cutting wheat too early, and letting it remain for days, or even weeks, in the shock, at the risk of wind and rain, it would be better to allow it to stand longer before cutting, and when cut secure it as promptly and as perfectly as possible. Wheat is better to dry thoroughly in the straw, either in the barn or in the stack, before threshing; there is then little danger of its becoming musty. Ohio farmers need not regret that this climate is not dry enough to produce the very highest quality of wheat. They do not want to sacrifice too much of quantity for extra quality, nor do they wish to sacrifice other agricultural products in order to raise exceptionally good wheat.

The right time for cutting wheat, so as to get from it the best flour, is a matter that affects the health of the people of the State as much as their pecuniary profits. No article of food is more wholesome or more nutritious than first-rate bread—an article which unfortunately a great many people have never seen. On the other hand, scarcely any article of diet is more unsatisfactory or more indigestible than some of the innumerable varieties of poor bread. Let this be fairly understood, that the bread at a farmer's table does not depend alone on the skill of his bread-maker. To make first-rate bread, a good, sound, glutenous variety of wheat must be sown on sound, dry ground. It must get fairly ripe before it is harvested, and then must be secured without damage. If such wheat is properly ground, it ought to make good bread; but until all these conditions are fulfilled, an unsuccessful bread-maker is not to blame.

MILK: PHYSIOLOGICAL AND MISCELLANEOUS.

BY E. LEWIS STURTEVANT, M.D.

[From the New York Report, with the permission of Dr. Sturtevant.]

PRIZE ESSAY.

The subject of milk can be best treated by commencing with its formation. In this way only does it seem possible to arrange the conflicting testimony of honest but unscientific observers, whose truths, through lack of minute attention to details, often tend each to obscure the other.

The mammary gland, its structure and methods of action, or the physiological formation of milk, must be the prelude to observations which are to form the basis of practical science.

ANATOMY AND HISTOLOGY OF THE MILK ORGANS.

The milk glands, whose mammæ or teats furnish the name to the class Mammalia of naturalists, are four in number in the cow, and united by enveloping tissues, form the vessel called the udder. This organ occupies the posterior portion of the abdomen, bounded laterally by the thighs, and varies somewhat in shape according to the breed or individual difference. Each gland is placed symmetrically when considered in relation to its neighbor, and terminates in a teat, into which it opens by a single duct.

The udder may first be considered as the sling or envelope which groups and protects the glands. Its outer covering is composed of skin similar to that covering the body, but more thin and pliable, and is covered more or less with a fine hair of considerable length. Its interior structure comprises areolar tissue and white fibrous and yellow fibrous tissue, which not only form septa between the glands, and connect the lobes, but also envelope the glands, holding them in position, and by their elasticity and firmness acting an important part in an organ subject to violent changes of size and condition. Fatty tissue occurs near the surface of the glands, and between the interstices to a greater or less extent, and in the virgin heifer largely determines the form and size of the bag.

The teats, usually projecting slightly forward in the heifer, are likewise covered with a skin similar to that of the udder, but uncovered with hair, pliant, flexible, and creased. Their number corresponds with that of the glands, and they are interesting as forming the outlet for the secretion, and in their mechanical adaptation to the needs of the offspring. Their structure is an areolar and fibrous tissue beneath the skin, which by its elasticity closes the outlet and prevents the escape of the milk. Sebaceous glands are present, particularly at the base, and their secretion renders the surface soft and less subject to injury.

The glands, although normally but four in number, are subject to variation. Frequently two additional ones, less developed than the others, are found, but possessing little activity, and showing but rudimentary teats. Quite often there is more development, and a yielding of the proper secretion. The shape of the glands varies in different breeds, and to a certain extent in individuals of a breed. Their shapes may be classified as flattened, pointed, hemispherical, and elongated.

The gland portion consists of ducts, reservoirs, and glandules. These form in part the wavy structures or inequalities on the surface of the gland, and, arborescent in their grouping, unite in canals, which likewise open into other canals, or pouches, or reservoirs, until the single outlet is reached in the teat. There is, however, this peculiarity, the lactiferous ducts are not strictly uniform in size throughout, nor do they lessen or increase in size by regular gradation, but slightly contracted at their inlet and outlet, have a bulge between, thus, in form, a series of saccular cavities. The constricted portions of these reservoirs are formed of elastic tissue which underlies the mucous membrane of the ducts. Thus the passage of the milk, as it passes from the glandules, where it is manufactured, towards the teat, its outlet, is retarded, and the pressure of the accumulating quantity is equalized throughout the gland.

Commencing with the teat, therefore, we have the single duct, constricted at both extremities, and varying in length and capacity with the breed, and in the individual. This duct opens into a reservoir, the largest cavity of the gland, which communicates with other reservoirs, and these, in turn, with others and with the ducts, until the lobulated terminal acini are reached. The pouches, in the lacteal organs of the cow, are thus seen to act the part of receivers, retainers, and transmitters, and if considered as ducts, can be compared to the structure of the tree, which originating with a single trunk, divides into branches, which by frequent subdivision finally terminate in the immense surface of the leaf.

These ducts and pouches are lined by a vascular mucous membrane. Externally to this, both fibrous and yellow elastic tissue are met with, which, by their free interlacings, make up the chief wall of the mammary ducts, and give to them strength and elasticity (Simonds). On the exposed surface of the mucous membrane is a thin covering of tessellated epithelium to defend it from injury. As we reach the coecal extremities of the system we have described, in the foliated edges of the glandules, we have the epithelium changing into cells, in the fundus small and polyhedric, but near the neck of the vesicle somewhat higher and bounding a very small central space (Stricker).

According to Stricker, the entire cavity of the acinus is filled with fat drops, the anatomical constituent of the milk, and although the contents of the acini are easily removed, many fat drops always remain adherent to the epithelium, and some may even be found distributed between the nuclei of the epithelial cells. In puerperal women who have died just after delivery, there may be seen milk globules interspersed sparingly among the closely compressed epithelial cells. These epithelial cells are produced by a species of budding or a progressive proliferation from the interior layers (Stricker. Virchow). From careful observations of the acini from the gland of the cow's udder, I have been unable to detect separate fat globules in any one instance; yet negative testimony is not conclusive. I can say, however, with considerable confidence, that the cells from the acini, when detached, can in no way be distinguished from the globules of the milk from the same udder.

It now seems necessary to allude to the uniform plan of nature in producing results rather by modifying parts already formed than by creating anew.

The mucous membranes may be considered as internal prolongations of the skin. The cells of the cuticle of the skin are colorless and flattened, often wrinkled and folded, and correspond to the pavement or tessellated epithelium of the mucous membrane. Subjacent to the epithelium or epidermis of either, occurs a structureless basement membrane, which can rarely be demonstrated, on account of its extreme tenuity. The third layer of the mucous membrane corresponding to the *cutis vera* of the skin, is also composed of areolar and elastic tissues, and in both is highly vascular, and furnished with papillæ or villi. These three structures in both are supported by a layer of lax tissue, in which the areolæ frequently contain fat. (Beale. Mic. Dict.)

The glands themselves are of an epithelial nature, and are but adjuncts of the skin. "An epithelial cell begins to divide, and goes on dividing again and again, until by degrees a little process composed of cells grows inward, and spreading out laterally gives rise to the development of a gland, which thus straightway constitutes a body continuous with layers of cells originally external. Thus arise the glands of the surface of the body, sudoriferous and sebaceous glands of the skin, and the mammary gland." (Virchow.)

If, then, we could unravel the milk glands, so as to present the surface flat, but little change, except that of adaptation, would be required to identify the structure with the skin. This observation is an important one, as it indicates the simplicity of method by which the purposes of nature are accomplished; and, as a corrollary to this simplicity, the effect of any agency, whether external or otherwise, on an animal, cannot be limited to any one part only, but its influences must be more or less general in their nature.

We find certain differences accompanying variation in structure. Different glands are adapted for different products, and these products are modified by the arrangement, and other circumstances attending their position and uses. We are told by Virchow that there is not a mucous membrane which may not, under certain circumstances, produce puriform elements, and that those covered with a single layer of cylindrical epithelium are much less adapted for the production of pus. So much influence has a slight modification in structure.

The coecal extremities of the glands, where the milk cells are generated, are surrounded by an abundant network of capillaries, which form a *rete* or net on their surface. These minute vessels communicate with the arteries and the veins; with the one for a supply, with the other for the removal of the blood. The arteries, by the frequent junction of distributing branches, acquire size, and are readily traced to their branches of supply. These are different for the various parts of the udder. Those which chiefly supply the anterior portion are traced forward into the chest, where they unite with the internal pectoral artery. The arterial trunk which supplies the blood mainly for the posterior portion, is the epigastric, whose branches, entering the udder from behind, are called the mammary arteries. Additional supplies are received from the circumflex artery of the ileum, and a free anastomosis takes place between all. (Simonds.)

A similar process also takes place with the veins, which continually increasing in size from the junction of minute venules and larger branches, carry the black blood both forward and backward. Those which proceed forward convey the blood into the large superficial vein of the abdomen, so well known as the milk vein, and by this channel the blood is transmitted through the walls of the chest into the internal pectoral vein, reaching the heart by the anterior *vena cava*. Those veins which proceed backwards empty themselves into the inguinal, and from thence the blood passes into the iliac veins, reaching the heart through the posterior *vena cava*. (Simonds.)

It is thus seen, that speaking generally, the anterior and posterior lobes of the udder have a separate source of supply and removal.

The nerves which supply the udder are from the third lumbar nerve. (Cooper.) Through the union of the nerves of the lumbar plexus with the nerves of the sympathetic system, we see ample provision for the special office of secretion as well as the endowment of ordinary sensation. (Simonds.) Through this arrangement we can understand why gentle handling of the udder may promote the flow of milk, apart from its mechanical effect, by the stimulation of the sympathetic nerves of secretion, while, should the stimulation be carried to an extent to be painful to the animal, or should it be distasteful to her, the action of the ganglionic system may be disturbed through the influence of the lumbar nerves.

PHYSIOLOGICAL FORMATION OF MILK.

A certain normal process, usually considered pathological, may next be considered. The fatty degeneration of cellular tissues, where fat globules take the place of the normal contents of the cell, has been studied especially in its relation with the liver. When the process is considered in detail, at first are found fat granules widely scattered, and indeed very small; these become more numerous, more closely aggregated, and after a time larger; at the same time the cells become larger, swell up, and larger and smaller drops of fat are found in them, until when filled to the utmost, they present the same appearance as those of adipose tissue, scarcely any membrane, and scarcely ever a nucleus is seen. (Virchow.) The histological element remains, but the contents are changed. We thus see that specific gland cells can become the seat of fat.

We have an analogous structure in the glands of the ear, the cells of which contain globules of oil, in addition to other contents. A similar development occurs in the sebaceous glands whose cells contain oil globules. These organs are important accessories for the discharge of hydro-carbonaceous matter from the system, a process likewise carried on enormously by the udder when the glands are in functional activity.

"In all these cases the fat which constitutes the chief constituent of milk, at least so far as its external appearance is concerned, and which furnishes the sebaceous secretion, originates in the interior of epithelial cells, which gradually perish and set the fat free. whilst scarcely a trace of the cells is preserved. * * * The closest resemblance to the manner in which the secretion of sebaceous matter ordinarily takes place, is presented by the earliest period of lactation when the so-called colostrum is yielded. A colostrum corpuscle is the still coherent globule which results from the fatty degeneration of an epithelial cell. The formation of colostrum and of sebaceous matter differ in this respect only, that the fat granules remain smaller in the former case, and that whilst large drops very soon show themselves in sebaceous matter, in colostrum, the last cells which are observed, usually contain only minute fat granules, very densely aggregated. * * * It is, however, unquestionable that between the earlier formation of colostrum corpuscles and the later one of milk, there is no other difference than this, that in the formation of colostrum the process goes on more slowly, and that the cells maintain their cohesion longer, whilst in the secretion of milk the process is acute and the cells more speedily perish." (Virchow.)

The observations of this most reliable observer seem certainly correct as linking together the processes by which these various secretions are obtained; that they have a structural affinity. Yet, I cannot suppose that the globules of the milk are simple oil globules set free from a membrane which invests them in numbers together, for it can hardly be supposed that these membranes would always be ruptured or disorganized. Very many microscopic observations by myself, made on healthy milk at a sufficient time from calving, have ever failed in detecting a body resembling a colostrum corpuscle, nor has repeated experiment ever demonstrated to me the existence of shreds or remnant of such an investment in new milk, and, yet more important, the relations of size of corpuscle to breed, to be hereinafter developed, would lead me to the proposition that the milk globule is itself a cell, with the contents changed into fat. before being detached from the walls of the acinus. As milk contains free fat, in small quantity, in addition to the milk globule, it is possible that the process, as described by Virchow, may, in part, be going on, but to a small extent, if at all.

According to my view, from the facts in this paper, already and to be set forth, the globule, the anatomical constituent of the milk, has at one time been part and parcel of the animal, and is, in the milk, the animal cell modified to its special purpose. The corollary to this proposition is that these globules must in a measure partake of the nature and condition of the animal.

According to either view, the milk glands must be the seat of a wondrous activity. The material supplied by the blood is, in part, utilized in building up this growth or cell proliferation, and in part furnishes transudations which wash the globules from their position into the reservoirs.

It may be objected that the process which should allow of the proliferation of the cells with a sufficient rapidity to furnish the globules for the known rapidity of secretion and flow of milk, would be inconceivable. Custom and familiarity have rendered the rapid digestion of food of little marvel, and only those who read works on physiology can appreciate the activity underlying the recognized processes of life. The circulation of the blood is performed, according to experiments of Vierordt, in 28.8 seconds in the horse, and, according to Herring, may be performed in from 15 to 20 seconds. It is supposed by Professor Austin Flint, that the time required for the passage of the entire blood of a man through his heart, is but *forty-eight* seconds. The secretion of the stomach, the gastric juice, according to the careful researches of Drs. Bidder and Schmidt on the dog, is poured out daily to an amount equaling one-tenth the weight of the body, while the experiment of Dr. Grünewaldt on a man with a gastric fistula, determined the amount at nearly thirty-one pounds avoirdupois, or nearly one-quarter of the live weight. In insect life we also observe remarkable activity. The aphis, according to Fitch, arrive at maturity and produces four young within three days. In vegetative life, however, we can best see the enormous fruitfulness and activity of cell action. Ward observed *Phallus impudicus* shoot up three inches in the space of twenty-five minutes. *Bovista gigånticus* (gigantic puff-ball) has grown in a single night, in damp weather, from the size of a mere point to that of an enormous gourd. From an approximate calculation, it is found that in this plant not less than 20,000 new cells were formed every minute. Kieser calculated that the tissue of some fungi augmented at the rate of 60,000 cells per minute. (Enc. Brit.)

THEORETICAL CONSIDERATIONS.

The theoretical consideration of the milking animal would show that the glands of the udder have certain definite relations with those of the skin; at least, they may be formed from the development of the same form of gland structure. We should expect also to find certain affinities between those glands which are, in a manner, homologous, and between their products.

In Fig. 5, I have represented the oil globules of the ear, the wax having been first treated with ether to remove the free oil.

In Fig. 6, I have represented the milk globule of the same cow taken from the teat at the same time as was the wax from her ear. The resemblance between the two drawings will be at once noticed, and they will suggest, I think to all, as they do to me, homology.

As to product, we have in the morphological elements of various glands, as well as in that of the mammary gland, the oil globule either floating in a fluid of more or less consistency, or surrounded by a more solid menstrum, whose constituents in either case are those which are albuminous in their nature, water, and salts.

As to their connection, the butter quality of the cow can be judged to a certain extent by the appearance of the product of the external glands. In forming a judgment of the value of a cow of the Jersey breeds, we find many people who examine the color of the skin about the teats, at the extremity of the tail, about the tail insertion, or the shoulders, and especially the inside of the ears. Through the kindess of Mr. E. F. Bowditch, of Millwood Farm, Framingham, who placed at my disposal his herd of thoroughbred Jersey cattle, and personally aided me in my experiments, I have been enabled to establish a definite relation between the color of the sebaceous and ceruminiferous secretion, and the butter product. The milk was taken at the same time from cows which presented marked differences in the color of these secretions, and who had received uniform treatment for some time previously, and the color of the butter showed just these relative differences. As the ear is the most convenient index for this color, it seems necessary to state that the relation must be sought for in the color of the oil, and not in that depth of color which may occur from the greater or less occurrence of the brown granules always present. Moreover, this color is deepened or darkened by exposure to the air, and it is probable that it does not so quickly respond to changes of the food of the cow, as does the butter element of the milk.

These theoretical considerations apply also to the ideas we form from the "handling" of an animal. The "touch" we so much admire, indicates to a certain extent the activity of the glands of the skin. The explanation of its value in judging of the milk qualities of an animal is, that the glands all over the body are influenced by the law of homologous variation.

This connection appears, sometimes, to be observed in the diversion of food by the animal economy. Linseed cake meal is one of the healthiest foods that can be fed to horned cattle. It seems seldom to injure an animal, even when fed in excess of its needs. The animal nourished by its aid has a soft skin, with a greasy or unctuous feel, and there seems to be a healthy activity in all the organs. On the other hand, feed a kindred food, the meal from cotton seed; there is an increased, nay, even dangerous activity to the milk glands; there is not the same feel to the skin; when fed in excess, there is a liability to inflammation. Again, there is scarcely any doubt but that the feeding of corn meal in excess is productive of garget in the milch cow, and indigestion or a feverish state when the disease is not localized. These several foods are all highly carbonaceous, and their different effects can be explained, to a certain extent, by the action of the glands of the skin. These glands aid to a large degree, apparently, in the elimination of the carbon ingested with the linseed meal, and to a far less extent of the carbon taken in with the corn meal or cotton seed meal.

As we find a difference between the external appearance of our animals, and a corresponding difference in their value for certain uses, it seems necessary, in conformity to law, that there should also be a variation in the individual or breed secretions.

The milk of the various breeds of cattle differ not only in individuals, but likewise between the types of the breeds, and these anatomical and histological considerations have a direct bearing on the study of milk in its uses and manufacture.

MILK.

Milk, the product of the glands of the udder, is a white opaque fluid of an agreeable sweetish taste, and slightly alkaline or neutral reaction. Its morphological element is a fat globule floating in a clear solution, which, by appropriate treatment, may yield casein, sugar of milk, and an ash. It is furnished in different proportions and widely varying quantities by the class of mammals, but with none so abundantly as the cow.

GLOBULE.

Under a magnifying power of 800 diameters, the milk globules appear as circles of unequal diameters, floating at will in a structureless fluid, whose presence would be unrecognized were it not for the floating bodies. When the field of the microscope is illuminated from the edge, these circles show themselves to be globules, with the darkened edge and light center so characteristic of fat, and produced by the differences of refractive power. Indeed, they are globules of fat, inclosed in a thin membrane or pellicle of extreme tenuity.

According to Beale, this envelope is albuminous, and can be demonstrated by the addition of a little acetic acid, which either alters, or, if very strong, dissolves the pellicle, and thus the globule changes from its circular shape, or coalesces with the neighboring globules. It is likewise found that either will not dissolve the fat until the investment is broken or dissolved.

According to Lehman, Mitscherlich, a German observer, has removed all doubt of the existence of this membrane. The addition of sulphate of soda has the property of causing the capsules to burst, after which the fat can be extracted by ether, leaving a turbid fluid, which shows, upon microscopic examination, minute, scarcely isolable, molecular granules, which are unquestionably the fragments of the destroyed capsules, and do not consist of fat, for on the addition of a little potash, they not only disappear under the microscope, but the fluid, formerly turbid, now becomes clear.

According to Dalton, there is no membrane present, and Carpenter writes that no proof of the organization of this pellicle has been detected, and it is thought by many to be simply the result of the contact of oil with albuminous matter, and under this view has aptly been called the *haptogenic* membrane.

According to Wagner, the recent researches of Drs. Von Baumhauer and F. Knapp have shown the doctrine of an exterior envelope filled with butter to be erroneous.

Such is the state of the evidence, to the best of my knowledge. Yet the existence of a membrane appears to me not only very probable, but proved, from the following reasons:

When milk is churned into butter, not only are the smaller globules unbroken, but they appear to have increased greatly in number in the buttermilk, suggesting the thought that the membranes, after having allowed the butter to escape, have contracted upon themselves into small granules.

When buttermilk from a cream churning is examined microscopically, it is found to contain an immense number of granules, or small globules, many more, proportionately, than are contained in the cream before churning, or even in the skim-milk, and occasionally some are found which, under high powers, develop an irregularity of outline, or granular appearance.

When butter itself is examined microscopically, it is seen to contain numerous globules and granules, but the majority of the globules are more or less distorted.

When butter is placed in boiling water, and thoroughly agitated, and then the mixture allowed to come to rest, the butter will very shortly float on the surface of the turbid water, which, upon standing, will deposit a sediment, of a greater or less quantity, and of a more or less flocculent appearance, according to the variety and make of the butter dealt with. When this sediment is examined microscopically, it shows indications of being composed of the ruptured membrane or investment of the globules from which the butter was obtained.

This sediment washes in quantity from butter treated as above, even when the butter is made from milk fresh from the cow. That they are not unchurned fat globules is shown by their specific gravity, being heavier than water. That they are not casein granules entangled, from the milk, would seem to be sufficiently indicated by the fact of their appearing in butter produced from new milk.

February 18, 1874, I placed some new milk in a place where it immediately froze. I there let it remain until it had frozen dry. I thought by this procedure to obtain milk chemically unchanged by evaporation, and so intimately mixed with the sugar of milk as to allow the globule to be easily ruptured by contact with the crystalline edges. I then placed a small portion of the still frozen milk into a mortar, and pounded and ground the mass for about half an hour Upon examining a small quantity under the microscope, with a drop of water, I observed the objects which are shown in figure 9. I noticed that these objects were heavier than water, and by polarized light, I satisfied myself that they were not sugar, which, indeed, was shown by their insolubility.

The above observations demonstated sufficiently to my mind the existence of a covering of some kind which incloses and protects the butter. I have been unable to prove, visually the *organization* of this pellicle, but that it is membranous I cannot doubt, when it is considered that the size of the globules which it envelops, when considered as groups, has a direct relation to the breed of the animal, and follows the individual variations brought about by food and external circumstances. Were these globules simply mixtures, or conglomerations of fat, released indiscriminately from larger cells, it would not seem probable or possible that in size they could maintain any constancy with the breed, or with individual changes.

It will be noticed that we find the sizes of the individual globules hardly uniform, even in the same drop of milk. When we examine the udder glands minutely, we find the acini not only varying greatly in size in themselves, some in adjoining or even in the same clusters being twice as large as others, but the cells with which they are lined differ also in size. By referring to the preceding histological description of the glandules, it will be noticed that the observation has previously been made of the size difference between the cells from the neck and pouches of the acini.

Upon measuring the cells of the acini of the udder glands, and the globules of the milk from the same udder, I was unable to find one single milk globule larger than any gland cell; I was unable to find one single gland cell larger than any milk globule. I did find a close corsespondence between the average size of the cells and milk globules, and more than this, when the cells were separated from the acini by violence, I was unable to distinguish those thus discharged from those which properly belonged to the milk.

Yet, notwithstanding some of these cells are twice or thrice, or even ten times as large as others, it will be found that if a sufficient number are considered, averages will be attained for the group, which will be tolerably constant. As a matter of observation, I find that an examination of milk from the same milk vessel at various periods (or even, I believe, from the same cow, with but short intervals between the milkings, as from one day to another), will give an average size for the globules, which may be expressed in figures, which, as compared with each other, have but insignificant differences. We thus have irregularity in individuals, but uniformity in groups.

By means of the measurement of the milk globules we then have a scientific method of studying milk in many of its changes, not only as relating to the animal, but also with reference to the uses to which it is applied.

PHYSICAL REACTIONS DEPENDENT ON GLOBULE.

From what we have thus far shown, it will readily be seen that milk is a compound fluid, and is not only subject to chemical but also to physical changes. When milk is allowed to stand, we all know that the lighter parts of the milk, or the cream, seek the surface, and form a covering readily distinguishable from that other portion so well known as skim-milk. If a minute quantity of the cream and skim-milk are separately examined under the microscope, differences will be seen as striking to the educated mind as those between rich cream and blue skim-milk are to the ordinary observer.

The cream is seen to be composed of myriads of globules in close contact; the skim-milk of comparatively few globules, widely scattered. It will also be noted that there are very many globules in the skim-milk which are so minute as to appear as mere points, showing no circular outline about a clear space, unless with an increased power to the instrument. It will be likewise noted that these globules are lighter than the fluid in which they are found, and are constantly seeking the upper portion of the glass slide under which they are confined.

These globules vary in size from mere granules to, in some instances, the comparaatively enormous bulk of 1-1500 of an inch. As the smallest globules do not admit of accurate measurement, I have for the sake of convenience, ignored in the measuring every thing under 1-27000 of an inch, a convenient division for my micrometer. These globules may be considered as small balloons, each one filled with a substance lighter than the fluid in which they float, and each covered with a membrane heavier than this fluid. By a law of matter, the area of these spheres does not increase in direct proportion to the increase of their contents, and accordingly the larger spheres have a greater proportional buoyancy than the smaller ones.

When the milk, as drawn from the cow, comes to rest, these globules immediately seek the place to which their specific gravity entitles them. Thus, there is a constant upward movement in the milk, the larger globules moving with a greater rapidity than the smaller ones, and the most minute on account of their being proportionately more weighted than the others, almost or quite in a state of equilibrium. We should, therefore, expect to find the largest globules at the surface of the milk, smaller ones at the bottom portion of the cream, and still smaller ones in the skim-milk. It is so in fact, as shown by the following observation.

Three drops of milk were taken from a vessel containing milk which had been undisturbed for fourteen hours. The first drop from the surface of the cream, the second drop from the lower layer of cream, and the third drop from a spot six inches below the surface.

Average size of globule in surface drop	1-6120 inch.
Average size of globule in second drop	1-6640 "
Average size of globule in drop from six inches below surface	1-8260 "

Were these globules to be subjected to the acton of a churn, it would be perceived that the larger ones would furnish butter quicker than the smaller ones, and of a different quality. The process of churning appears to consist in rupturing the membranes by the friction of globule against globule, and washing out and collecting in mass the fats therein contained. Now, the larger the globule, the greater, apparently, the action of friction, or else when broken, the inclosed butter is more readily extracted, or possibly these agencies are combined.

Three Jersey cows on similar feed, and yielding about the same amount of milk. The milk of the same milking was set on the same shelf, and churned as nearly alike as possible.

Name of cow.	Average size of globule.	Time of churning.
Desdemona	1-4440 inch.	13 minutes.
Gazelle	1-5260 "	30 "
Beatrice	1-5520 "	34 "

In the next table we present the result of experiments, where the milk, except where otherwise stated, was taken fresh from the cow, cooled rapidly to 60° F., and churned in a Florence flask. These figures are not selected, but are impartially presented as fair exponents of observed facts.

Average size of globule.	Time churned.	Butter first appeared.	Sp. gravity at 60°.
1-5680 inch (cream)	3 minutes.		983
1-5940 "	8 "	5 minutes.	1027½
1-6763 "	25 "	15 "	
1-8252 " (churned with egg-beater)	50 "	36 "	1031
1-8320 "	60 "		1031 at 62°

These relations are too constant to be accidental, and are useful as explaining some of the actions of milk in the hands of the dairy-maid. When churning takes place, the larger globules are broken first, and, by being overchurned, apparently hinder the breaking of the smaller globules. The more minute, perhaps, have little influence on the weight of butter obtained from a given portion of milk. Let me ask those interested to try the experiment for themselves. By agitating a portion of milk in a white glass bottle, spots of butter will appear against the sides of the glass, long before the butter has "'come," in dairy parlance. These specks as first seen are the produce, undoubtedly, of the larger globules.

If it is desired to carry the experiment further, let the cream from the different depths of milk, after standing, be churned separately, and note the result. This experiment can be readily accomplished by skimming a portion of milk at intervals, and churning each collection by itself. It will be perceived that the first skimmings will not only require less churning to be made into butter, but that the butter thus made is of a stronger "grain" than that made from the later skimmings.

If this be a fact, as I think it is, and if the larger the globule the better defined the "grain" to the butter, as I am inclined to believe, we may form an idea of the state in which the butter fats may be contained in the globule. It is possible, under this view, that the different fats of which butter is composed are somewhat separated in the globule, and not so intimately mixed as to be formless. This hypothesis is strengthened by the known effect of overchurning upon butter. It is conceded that overchurning softens the butter and destroys the grain, as also does overworking the butter after it leaves the churn. In an experimental churning of a pint of milk in a bottle, the motion was kept up for a long time after butter had appeared. The butter was then removed by means of a linen strainer, and was soft and greasy. The buttermilk was soon covered with a yellow oily scum. At another time a portion of milk was churned, the butter removed by a filter, and the buttermilk then churned until it produced an additional lot of butter. The same cow's milk, from the same pan, was again churned, but the butter, after it had separated, was weighed and returned to the churn, and the process of churning continued the same length of time as in the previous trial. The butter, as finally produced, was not only inferior in appearance, but it had only slightly increased in weight by the additional churning, and was less in weight than in the previous churning.

By remembering this fact, that milk churns in quickness according to the size of the globule, and that globules under a certain size (or if disproportionate in size or number with other globules) are most probably wasted, an explanation is at once suggested of the discrepancies of reports of different observers on the effect of deep or shallow setting on milk. When we have a deep setting it is possible that we may obtain a larger bulk of cream than from the same milk set in shallow basins; but the amount of cream measured by bulk or weight need not necessarily be an index of the amount of butter which may be churned therefrom. If measures of cream from each kind of "setting" contain a different number and bulk of globules which will "churn," the result in butter must be different, although the creams of equal bulk be of equal richness by chemical analysis.

That we may be fully conscious of this action of gravity on the globules, and that we may clearly see how this force tends to separate the globules into more uniform layers, I will call attention to some additional results, expressed in tabular form:

Out of 300 separate measurements—	Top layer cream.	Under layer cream.	Milk.
There were under 1-13500 inch	0	1	2
About 1-13500 inch	0	38	18
About 1-9000 inch	10	29	19
Between 1-7000 and 1-6000 inch	37	20	33
Between 1-6000 and 1-5000 inch	16	5	10
Between 1-5000 and 1-4000 inch	21	6	10
1-4000 inch and larger	16	1	8
	100	100	100

Of the 100 measurements, each—	Average.	Largest globule seen.	Smallest seen.
From top layer of cream	1-5792 in.	1-1500	1-9000
From lower layer of cream	1-9933 in.	1-3375	Granules.
From the milk	1-8252 in.	1-1930	Granules.

These figures not only demonstrate the fact of the larger globules being nearest the surface, but also show that the majority of the smaller globules must be at a depth. Indeed, were the measurement of granules made for this calculation, the result would be even more striking.

The top layer of the cream is found to contain comparatively few granules, the lower layer of cream many, but still a number insignificant as compared to the number of sizable globules, whilst the skim-milk is found to abound with them.

As these granules have an important bearing upon some of the reactions of the milk as manufactured, allow me to again call attention to the fact that by the term *granules* I designate, for convenience sake, those globules which are of a size smaller than 1-27000 inch.

In our further investigations, it becomes necessary to bear continually in mind this action of gravity on the position of the globule. In results designed for comparison, it will be found necessary, in each case, to take our specimens for examination from the same relative position, or, in other words, from the same layer of milk in every case. In order to do this, not only must the vessel containing the milk be of somewhat equal depth, but the element of time from milking must enter into our calculation.

INFLUENCE OF INDIVIDUAL CIRCUMSTANCE.

That the character of the food consumed by the cow affects the size of these milk globules, I cannot doubt. The element of nutrition is a most important one in all physiological processes, and it cannot be without influence here. The separation of this influence for the purpose of investigation is, however, difficult to accomplish satisfactorily, and, although I have obtained observations which would seem to indicate the especial effects of a change of diet, I hardly feel justified in more than suggesting such an influence, as one which may be studied physically, and find a definite expression.

The influence of the period from calving on the size of the globule is readily shown. As a rule, the globules diminish in size as time goes on, and, still more important, the globules become more uniform in size, or more free from violent extremes. In the colostrum, or milk from the newly delivered cow, we observe large, conglomerate globules, mixed with those of an ordinary kind. See Figure X, of which the extreme measurements are very different. In Figure VI, we have milk from a cow a long period from calving. These figures do but illustrate rather than prove the proposition. The proof is in the tables given below.

The milk from the same cow at different periods from calving:

Days from calving.	Average size of globules.
1½	1-4400 inch.
3½	1-4666 inch.
33	1-6000 inch.

Three cows of the same breed, same herd, under similar treatment, and milked at the same time:

Cow.	Days from calving.	Average size of globules.
No. 1	15	1 4440 inch.
No. 2	27	1 5260 inch.
No. 3	40	1-5520 inch.

No. 3 had a great uniformity of globules, and very few granules. Except for the granules, No. 1 had been as uniform. That the feed did not probably affect the experiment unfavorably, seems reasonable to infer. I give below not only the food, but the proportion of butter to milk:

Cow.	Feed.	Proportion.
No. 1.	Pasture, and ½ qt. of oil meal, about 2 to 3 qts. shorts	= 1 lb. : 23.23 lbs.
No. 2.	Pasture, and 3 qts. of oil meal, 3 qts shorts, 1 qt. oats	= 1 lb. : 23.27 lbs.
No. 3.	Pasture, and ½ qt. of oil meal, about 2 to 3 qts. shorts	= 1 lb. : 17.77 lbs.

Milk of different cows, but of the same breed and herd, measurements taken at different times, and under varying conditions. The sequences are not, therefore, as regular as they otherwise might be.

Days from calving.	Average size of globules.
1½	1-4935 inch.
3½	1-4718 inch.
12	1-5580 inch.
33	1-6384 inch.
69	1-5400 inch.
135	1-6040 inch.
375	1-6339 inch.

By collating some measurements which were taken from the lower layer of cream, and not incorporated in the above table, we have additional illustrations:

Days from calving.	Average size of globules.
1½	1-4580 inch.
33	1-6200 inch.
69	1-6750 inch.
135	1-6720 inch.
375	1-7660 inch.

We may now proceed to consider some of the consequences which result, in practice, from these facts. It is well known that the yield of butter from cows varies in amount from day to day, from causes which have not yet been accurately determined, but may be formulated in the terms food and circumstance. Mr. Blanchard, quoted in the National Live Stock Journal for 1872, p. 205, in an address before the "Butter Makers' Association," states that a dairy which one day will make one pound of butter from twenty-three or twenty-four pounds of milk, will the next day, perhaps, under apparently similar circumstances of feed and temperature, require twenty-eight pounds. In addition to this daily variation in butter yield, which is undoubtedly determined, in large part, by the processes of nutrition, we find on an extended scale a constant variation for season.

Let us illustrate this fact, so generally known, by a few statements: J. B. Broughton, of Malone, N. Y., has milked three hundred cows, and as stated in the fourth report of the Vermont Dairymen's Association, his butter yield in the spring, on hay, was in the proportion of one pound of butter to twenty-seven or eight pounds of milk. In June, on grass, the proportion was as one to twenty-one, and for the year as one to twenty-four.

Another statement from the National Live Stock Journal for September, 1872, gives the spring proportion as one to twenty-six, the November proportion as one to seventeen and a quarter pounds.

The record of the famous Jersey cow, "Lady Milton," states her butter yield as follows:

June and July trial	= 1 lb. : 17.3 lbs.
August trial	= 1 lb. : 15.6 lbs.
September trial	= 1 lb. : 15.4 lbs.

We will tabulate a few other cases, covering a range of breeds, and give our authorities:

Cow.	June proportion.	September proportion.	Authorities.
Half Jersey	= 1 lb. : 29.1 lbs.	= 1 lb. : 25.3	Ag. of Mass., 1868–9, 176, pt. 2.
Half Ayrshire	= 1 lb. : 22.8 lbs.	= 1 lb. : 22.2	Ag. of Mass, 1859, 213, pt. 2.
Half Ayrshire	= 1 lb. : 26.2 lbs.	= 1 lb. : 22.3	Ag. of Mass., 1856, 348.
Three fourths Ayrshire	= 1 lb. : 26.2 lbs.	= 1 lb. : 22.7	Ag. of Mass., 1856, 348.
Durham and Ayrshire	= 1 lb. : 22.6 lbs.	= 1 lb. : 20.2	Ag. of Me., 1858, 145, pt. 2.
Durham	= 1 lb. : 26.1 lbs.	= 1 lb. : 24.1	Trans. N. Y. Soc., 1850, 37.

This table could be indefinitely extended, but in all my notes I have but one record where the autumn milk of any one cow made less butter proportionally than the early summer milk.

One more quotation: Mr. Ellsworth, a very reliable and accomplished farmer of Barre, Mass., published in the Agriculture of Massachusetts for 1871–2, a record of the butter proportion of his herd of high grade Durhams. It is as follows, the trial being made once each week:

In March	= 1 lb. : 27.5 lbs.
April	= 1 lb. : 27.3 lbs.
May	= 1 lb. : 26.4 lbs.
June	= 1 lb. : 26.4 lbs.
July	= 1 lb. : 26.8 lbs.
August	= 1 lb. : 33.0 lbs.
September	= 1 lb. : 26.4 lbs.
October	= 1 lb. : 25.7 lbs.
November	= 1 lb. : 25.3 lbs.
December	= 1 lb. : 21.5 lbs.
January	= 1 lb. : 22.0 lbs.

From the tables we have now presented, covering the records of cattle under diverse circumstances of food and treatment, I think it may be assumed as a general truth, that the milk is, as the farmers express it, richer in the autumn than in the spring.

Although this fact is usually attributed to the influence of the food, I think it is probably the effect of the time of calving, and I desire to claim an agency for the globules of the milk in securing these results. If, as we have shown to be the case, the globules, although decreasing in size, yet make a nearer approach to an uniformity of size, as time passes from the calving, it would seem, theoretically at least, that there would be a greater saving of the butter from the churning, from the cow old in milk, than from the same cow when a fresh milker.

As illustrating the influence of uniformity of size of globule in producing butter, I give the following experiment, which, although made with reference to solving the problem of the effect of keeping distinct breeds for the supply of a dairy, and in so far as it refers to the breeds, anticipating some conclusions which are to be developed further on, yet may, in this place, be considered simply as results derived from milk of different physical characters.

The experiment was made by taking twenty fluid ounces of Jersey milk, and dividing into two parts as nearly alike as could be. The same was done with the like quantity of Ayrshire milk:

Jersey milk; average size of globules, 1-5252 inch.

Ayrshire milk; average size of globules, 1-7080 inch.

These milks were cooled to 60° and churned by shaking in a Florence flask.

Ten ounces Jersey milk; butter came in five minutes; churned eighteen minutes; product, 136 grains of butter.

Ten ounces Ayrshire milk; butter came in twenty minutes; churned thirty minutes; product, 76 grains of butter.

These twenty ounces of milk, churned in two lots, produced 212 grains of butter.

Ten ounces of Jersey milk plus ten ounces of Ayrshire milk, mixed and churned; butter came in thirteen minutes; churned twenty minutes; then removed butter by a filter and churned the buttermilk ten minutes longer; product, 179 grains of butter.

Difference in favor of churning each milk separately, 33 grains, or about eighteen and a half per cent.

Let us investigate the size of the globule in the buttermilk:

Milk.	Average size of globule, milk.	Buttermilk.
Jersey	1-5252 inch.	1-12500 inch.
Ayrshire	1-7080 inch.	1-22000 inch.
Mixed	....	1-10600 inch.

Number of globules under micrometer at one time:

		Average size.
Jersey, 1st trial	33	1-9600 inch.
2d trial	54	1-14400 inch.
3d trial	34	1-13600 inch.
Ayrshire, 1st trial	124	1-20600 inch.
2d trial	63	1-23300 inch.
Mixed milk, 1st trial	37	1-9280 inch.
2d trial	53	1-12900 inch.
3d trial	44	1-9700 inch.

It is acccordingly seen that there is an indicated waste in mixing milk of various sized globules, for the purpose of churning. This can be accounted for in this case in either one of two ways—breed causes, or dissimilarity in size of globule. It is probable that the first cause obscures the experiment somewhat, yet the latter influences in a large degree. I desire those who do not accept this explanation (of an accessory cause) to try the proportion of butter to milk in the autumn, in milk from cows newly calved, and those who have calved in the spring. To rightly understand the various problems connected with the dairy cow, it is absolutely essential that all the influences affecting her milk should be known, in order that variation, caused by circumstance or individual peculiarity, may be successfully eliminated from those changes produced in the milk by the feed.

BREED VARIATION.

The variation consequent on breed has either been almost entirely overlooked by the chemist in his analytical investigation, or else it has been most unphilosophically assumed not to be of importance. Certain it is that unless the chemist deals with typical specimens, and gives accurately and minutely all the circumstances attending the nutrition and hereditary peculiarities of the animal from which the milk was obtained, together with an account of the treatment of the milk between the milking and the analysis, also with the circumstances attending the milking, we can have no correct series of analyses by which the composition peculiarities of one milk can be scientifically studied in its relations to other milk.

Let me call attention to the fact that the nutrition of the animal affects the percentage composition of its milk, as does also the position of the milk with reference to the whole time occupied in milking. Furthermore, each teat probably yields a milk of somewhat dissimilar percentage composition; for a careful series of observations made by Mr. Edward Burnett, of Deerfoot Farm, Southboro, Massachusetts, show that the rear teats produce a milk richer in cream than the forward ones.* If, then we have gland variation, milking variation, season variation, food variation, individual variation, breed variation, it will be realized how important it is, for scientific study, that the complete history of the circumstances preceding an analysis should be given in every case.

We have already given an account of some of the variations in the morphological constituent of the milk, which accompany certain conditions in the cow, and certain positions in the milk. We will now proceed to give the result of our observations illustrating the variations produced by breed.

The Jersey, the Ayrshire, and the Dutch† breed are those with which I am not only most familiar, but the only breeds whose milk I have had any opportunity to investigate. In the Jersey and the Ayrshire milks my morphological studies have been fairly complete; in the Dutch milk, more limited.

The Jersey cow has been bred wholly with reference to butter; the Ayrshire cow for cheese and butter; the Dutch cow principally for the production of cheese, although butter and beef are each claimed for her by her American advocates.

The belief in the universality of inheritance as a law, and that the animal structure is but an equilibrium between many forces acting both in the present and from the past, would lead us to infer that any changes brought about by selection or otherwise, disturbing the relative action of any one force, would, in time, produce recognizable changes in an animal.

It is, in fact, impossible for any one who has a positive belief in the inflexibility of causation, as a law, to expect that a continued seeking for a product in cheese or butter, could take place in any community of intelligent breeders without influencing, in time, the character of the animal. We therefore approach our inquiry with a well grounded expectation of finding differences in the milk which will correspond to the uses to which the milk is applied, among a civilized and highly intelligent people.

Each breed has not only its own type, but also includes individuals who depart to a greater or less extent from the typical form. Under one aspect, the typical form may be considered as being the form possessed by the larger numbers of the best bred cows of a breed. In the discussion which is hereafter to follow, I have endeavored, in every case, to apply my observations and conclusions to the product of animals which may be

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* The experiment of Mr. Edward Burnett shows percentages as below:

Date.	Name of Cow.	Percentages of cream in milk from—	
		Hind teat.	Forward teat.
February 13, 1874	Daisy Deerfoot	15	13
February 13, 1874	Jessie	13	12
February 19, 1874	Atlantic	26	20
February 19, 1874	Rose	15	11

† By Dutch I mean those large black and white cattle, imported from Holland, and frequently called "Holsteins" in the United States.

considered as typical, for if we should take the exceptional cow for the purpose of study we should make confusion indeed.

JERSEY MILK.

The milk from the Jersey cow, when examined microscopically, is seen to possess globules larger, both absolutely and on the average, than does the milk from the other two breeds. Another noticeable and very important observation is upon the absence of granules. These granules do, however, appear in the milk in limited numbers, and can always be detected in considerable number in the skim-milk and the buttermilk. In consequence of this structure, this milk, when set in percentage glasses, throws up its cream with rapidity, and presents usually a blue appearance in the skim-milk. I have known a specimen of Jersey milk to throw up the bulk of its cream in four hours, although it usually requires a longer time for this process to take place. On account of this peculiarity of globule, this milk is one unfitted by structure for the milk retailer. The cream rising to the surface during the interval between the milking and delivery, does not *readily* mix again with the milk.

The quick rising of cream is, however, of importance to the butter dairyman, as it is, in the breed we are considering, united with a completeness, which is indicated by the blue skim-milk. The cream from the Jersey cow can, therefore, be skimmed from the pans at a somewhat earlier stage than can the other creams, without producing thereby waste. When the skim milk is set in a cool place, it is seen to throw up very little cream, although even kept for a long time, in this respect differing from the skim-milk of the typical Ayrshire. This will be better understood if we reflect that it is the milk globule which gives color to milk, and the absence of this globule would, therefore, be indicated by a change of color. If all the globules of the milk were of the size of the largest, the skim-milk would probably be nearly the color of water; if the small globules are very numerous, and in equilibrium in the fluid, a skimming of the cream could take place without noticeably affecting the color of the remainder.

In considering the Jersey milk in its butter relations, we must consider that the size of the globule would indicate an easy churning quality, and a strong "grain" to the butter. As a matter of repeated observation, this is not only the case, but the enveloping membrane appears weaker than that which incloses the fat in the Ayrshire or Dutch milk examined. This weakness is indicated not only by the globules being more readily ruptured under the field of the microscope, but also by the effect of the chemical action induced in the milk upon standing. In Jersey cream, kept for some time, ether will detect much more free fat than in Ayrshire cream of the same age.

This comparative weakness of the globule is well shown by the following experiment, which explains itself. The cows were selected in the second instance with sole reference to the unformity of the size of the globule:

Cow.	Average size of globules.	Age of milk.	Butter came.	Whole time of churning.
Ayrshire	1 4666 inch	Cream, 3½ days old		20 minutes.
Jersey	1-5680 inch	Cream, old		3 minutes.
Ayrshire	1-6000 inch	New milk	15 minutes	25 minutes.
Jersey	1-5940 inch	New milk	5 minutes	8 minutes.

I am certain from convictions gained from my own experiments that the Jersey milk should be skimmed certainly not later than when the milk commences to thicken or "lopper" at the bottom of the pan, while the other milks under consideration should pass considerably beyond this period, and develop somewhat more acidity, before the cream is removed.

AYRSHIRE MILK.

The Ayrshire cow having been bred for both butter and cheese product, shows corresponding changes in her milk. We can consider this breed, for convenience, as divided into three groups, the members belonging to the one group producing a milk better fitted for butter making; to the second, for cheese making; and to the third, for the production of either butter or cheese, or both.

The milk of the Ayrshire cow, irrespective of the group to which I have assigned her, is noteworthy for the presence of granules in large number.

The butter group of our division furnishes a milk but scarcely inferior in size of globule to that of the Jersey cow, but the sizes appear far less uniform. The cream does not separate so completely from the skim-milk, nor with the rapidity noticed in the Jersey milk. The skim-milk is more bluish in color than it is in the milk from the cow belonging to the other groups. The churning of this milk will occupy a somewhat longer time than will the corresponding milk of the Jersey cow, and produces a butter of a somewhat different texture.

The characteristic of the milk of the cheese group is a small globule and innumerable granules. The cream does not therefore rise either with rapidity or completeness, and the skim-milk shows little, if any, blueness. Oftentimes a rich milk will show but a small per centage of cream. This milk, although it occupies a long time in churning, furnishes a sweet butter with a fine "grain." A considerable portion of the fat is, however, retained in the skim-milk, as is indicated by the color; it is eminently fitted for the use of the milk retailer.

The milk of the third grouping possesses characters in common with the other groups, but varying in their type, more or less toward the extremes already considered. It has globules of a good size, and also the innumerable granules. It is accordingly neither so good for butter as the milk first considered, nor for cheese, as the typal milk of the cheese group, but for the use of the ordinary dairy farmer is unexcelled, as it allows of either butter or cheese being made with a fair degree of economy, and is also well fitted by its structure for sale or transit.

As but few breeders have turned their skill towards breeding for either butter or cheese specifically, and as the selection of the breeding animal has, perhaps, often been unconsciously performed rather than predetermined, it is not surprising that the majority of the milks examined belong to this last group. Perhaps it may seem hypercritical to divide the Ayrshire milk as I have, but it is certainly philosophical and the results of my experiments bear out, and indeed suggested, this classification. Although the border lines may be ill defined, the typal forms exist.

The Ayrshire milk, in general, possesses an investment to its globule which seems to be tougher than the globule covering of the Jersey milk. It requires a longer time to be acted on by the acidity or other changes developed in milk upon standing. It is well, therefore, in practice, to allow this milk to pass somewhat beyond the "commencing to lopper" change before skimming, and the cream, theoretically, would produce a greater butter result if kept for a longer period still, in the cream jar. The granule present in such large quantity in the skim-milk, gives in practice, a distribution of the fat throughout the milk, a circumstance which is very favorable to the manufacturer of cheese.

The cream from this milk mixes again with the milk with a certain facility upon agitation. This circumstance, which is an important one for the cheese maker, is noteworthy in my experience from its almost non-existence in the Jersey milk, and the great readiness with which it took place in the milk from the Dutch cow.

DUTCH MILK.

In the samples of Dutch milk that I have examined the globules have been found quite small, of a certain uniformity, and comparatively few of the size which I designate granules.

The properties given to this milk by its globule, and which has been verified by a few experiments, is a slow churning, and a fine "grain" to the butter. The absence of granules, or rather their non-occurrence in an appreciable number, gives a blue appearance to the skim-milk. The property this milk possesses of having the cream and skim-milk readily miscrable by agitation may offset in some degree the absence of the granules, so far as cheese-making is concerned.

BUTTER.

Butter made from different cows of the *same* breed, on similar feed and giving the *same* quantity of milk—made at the *same* time and in the *same* way—does not necessarily present the same color, as is shown by the following experiment made with three Jersey cows: *

	Gazelle.	Desdemona.	Beatrice.
Color of skin	Very orange	Middling	Light-colored
Cream	¾ lb	¾ lb	1 lb.
Skim-milk	7¼ lbs	7¼ lbs	6½ lbs.
Total milk	8 lbs	8 lbs	7½ lbs.
Temperature at which set	88°	84½°	88°.
Average size of globule	1-5260	1 4440	1-5520.
Time in churning	30 minutes	13 minutes	34 minutes.
Temperature of cream when churned		60°	60°.
Distance of cow from calving	27	15 days	40 days.
Butter product	5½ oz	5½ oz	6¾ oz.
Color of butter	Very high-colored	Good color	Light color.
Melting point	99°	99½°	96°.
Character of butter	Most waxy Good grain	Waxy Best grain	Less waxy than others. Poorest grain.

It is, then, not correct to claim depth of coloring as characteristic of the butter of any one breed. I have seen Ayrshire butter of a deeper color than Jersey butter, and *vice versa*. I am inclined to think, however, that there is a difference in the *shades* of color in the butter from the different breeds. The Jersey butter is usually, perhaps always, colored by an orange pigment, which is seemingly characteristic. Owing to this orange tinge to the fats, and the character of the substance investing the globule, the Jersey cream oftentimes appears high colored, especially after standing. This peculiarity of color to the cream is not confined to the Jersey breed, but seems more usually present or more prominent in this breed than in the others. The color of the Ayrshire butter is yellow, oftentimes a deep yellow, but appears to lack the particular orange shade already described. The few samples of the Dutch butter I have examined were of a light yellow color, without trace of orange.

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* I am indebted to the kindly co-operation and personal assistance of Mr. E. P. Bowditch, of Framingham, for this experiment, made with cows selected from his valuable imported and thoroughbred herd.

The grain of the butter apparently depends on the state of mixture of the fats in the globule, the waxiness from the greater or less proportion of the solid fats. So far as I have examined, the grain seems to vary according to the sizes of the globule. In the Jersey butter the grain is well defined, in the Dutch butter, very fine, in the Ayrshire butter intermediate.

When equal quantities of Jersey and Ayrshire butters were washed in boiling water, and the foreign matter which was removed was allowed to settle, it was found that this nitrogenous matter was not only more abundant in the Jersey butter than in the Ayrshire, but showed a slightly different character, perhaps defined by calling it more flocculent. Theoretically, we should, therefore, anticipate the difference in the keeping qualities of these butters, which we have found in our experiments.

Some parts of Guernsey, Jersey, Ayrshire, and Dutch butters were placed in a warm cupboard, near a steam heater. The Guernsey pat moulded in spots in about a month; in seven weeks the seven Jersey pats were all rancid, one sample having lost its color in spots, the white spots resembling tallow in appearance; no butter flavor. The two Ayrshire pats had lost flavor, and were poor, but not rancid (one sample in the same cupboard, but on another shelf, retained its butter flavor and taste for three and a half months, from October fifteenth to January thirtieth, and, although not strictly first-class at the last, yet was of fair quality. The Dutch pat not only retained its color and sweetness, but also its flavor, and this notwithstanding it was unsalted. Perhaps this "keeping power" is the direction of the usefulness of this breed. Holland has for centuries been famous for its shipping butter, and it is possible this keeping quality may be as much in the nature or endowment of the milk as in the care exercised in manufacture. My experiments with the milk of this cow have, however, been too few in number to allow of my dwelling more particularly upon my results.

CHEESE.

Prima facie, the milk most economical for the cheese manufacturer to use is the one which will allow the globules of fat to remain in the cheese, giving to it richness and flavor. That the distribution of the globules in the cheese is an important feature can be inferred from the remarks of Dr. Voelcker, who not only writes that the price of cheese is usually influenced by the quantity of butter contained therein, but also continues on another page: "The rich appearance of old cheese, however, is by no means attributable entirely to a very large proportion of butter, nor is the poor condition of new or badly made cheese referable solely to a deficiency of butter. One of the chief tests of the skill of the dairymaid is the production of a rich tasting and looking, fine-flavored, mellow cheese from milk not particularly rich in cream. That this can be done is abundantly proved by the practice of good makers."

To the influence of the milk must also be attributed, in part, the discrepancies in the opinions of skilled manufacturers. Some advocate the removal of a portion of cream from the cheese vat, for the purpose of butter making, and deny much injurious influence thereby on the cheese, whilst others deprecate this course. Its practice is, however, far more common in the late than in the early season, and it will also be remembered that this paper shows a decreased size of the globules as cows are distant from their calving. Mr. Gardner B. Weeks reports sales from his creamery of skim milk cheese in quantity, at a price within a cent and a half a pound of the highest quotations for whole milk cheese. All writers unite in testifying to a loss of butter in the whey, and many processes have been invented for its extraction.

These discussions, although of much value, have heretofore left the differences in the milk out of consideration. Quality of milk does something for the maker; skill also does something; both combined bring great success. The mixed milk of numerous cows does not always indicate to chemical appliances, the actual or potential value to the dairyman, for he deals not alone with composition, but with structure also in the processes of either butter or cheese making.

During the ripening of cheese, a portion of the casein or curd suffers a decomposition, and is partially changed into ammonia; the latter, however, does not escape, but being an alkali combines with fatty acids produced in course of time from the butter. The peculiar mellow appearance of good cheese. though due, to some extent, to the butter which it contains, depends, in a higher degree, upon a gradual transformation which the casein or curd undergoes in ripening.

Such being the process, it is clear that an even distribution of the fatty matter (the globule containing the olein, margarin, etc., each compounds of their own fatty acid) through the curd is desirable, in order that each particle of ammonia and acid as set free, may, at the moment, be in contact. Consequently, that milk which is the richest in butter by analysis, and yet which throws up the least cream upon standing, and whose cream, when once risen, will readily remingle with the milk upon agitation, most nearly fulfills the desired condition.

So much confidence do I feel in the correctness of these conclusions which are derived from the study of the milk globule, that I am willing to affirm that the same care used in making cheese from milk of each breed, will produce a different quality in the result, although the milk may contain equivalent amounts of fat by analysis. Even that the cream of a few hours may be skimmed from these milks, and the cheese made from the remainder will produce such variable grades in ripening that some may be sold as skim-milk and others as full-milk cheese.

The Jersey milk, according to these views, is unfitted for the cheese maker, and the farmer who keeps Jersey cows to supply milk for cheese factory use, is, paradoxical as as it may seem, producing results most beneficial to neither himself nor the manufacturer.

The Ayrshire milk is remarkably fitted for the uses of the factory, as not only does it contain the chemical elements of cheese, but the fat contained in that form which is the most useful, and the forms not carried to such extreme as to unfit the milk for changes in the manufacturing system. With Ayrshire milk I cannot doubt but that reasonable skimming, or that skimming which would ordinarily take place in manufacture, could take place without necessarily deteriorating, to any great extent, the quality of the cheese produced. Whatever loss there might be would be so trifling as to be readily compensated for by the skill of the manufacturer, for only that cream, in practice, would be removed which usually escapes in the whey as waste.

The Dutch milk would appear by its structure to be hardly equal to the Ayrshire milk for cheese purposes, but it is possible that the ready miscibility of the cream with the milk, after the rising, might offset the deficiency of the granule.

CONCLUSION.

I have now presented the subject of milk in a few of its aspects. The subject is one of such immensity, as, indeed, are all subjects when critically examined, that it seems impossible that the labors of one person can cover the whole ground. In my consider-tion of this subject, I have been compelled to use authorities somewhat, but so far as I could, I have depended on original observation. In the appendix is given a list of all the works that I am aware of having consulted.

I think my experiments are suggestive and embrace important truths; and I trust that other observers, reviewing the whole ground, will either disprove or place upon a firmer foundation my conclusions. Infallibility can not be claimed for any observer, but I have endeavored to approach this subject without bias; and with a sincere desire for truth, to report my observation without reference to preconceived theories, and to draw my deductions therefrom without being influenced by either partiality or prejudice toward any one breed or its advocates.

WAUSHAKUM FARM, SOUTH FRAMINGHAM, MASS., *Nov.* 20, 1873.
Milk portion rewritten May 1, 1874.

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OHIO STATE UNIVERSITY.

(FORMERLY OHIO AGRICULTURAL AND MECHANICAL COLLEGE.)

BY PROF. EDWARD ORTON, PRESIDENT OF THE UNIVERSITY.

The history of this institution deserves a place in the records of the State Board of Agriculture, for the Board, by its collective action, and still more by the individual exertions of its past and present members, has had much to do in shaping the character and fortunes of the University up to the present date. The interest of the Board is fully justified by the fact that this institution must become a powerful auxiliary in advancing a rational and intelligent system of husbandry in the State, unless it proves recreant to one of the chief purposes for which it was founded. On the other hand, the recognition and aid which so influential and thoroughly representative a body as the State Board can give cannot fail to go far in accrediting and introducing the youthful institute to one of the great interests which it is especially set to serve. All experience in this country has shown that it is a very difficult task to establish any vital and valuable connection between practical agriculturists as a body on the one side, and those institutions on the other whose special aim it is to deal with the sciences that underlie agriculture. The farmer sets an inordinate value on his practice and the man of science on his theory. The practice is often unscientific, and the science is perhaps still oftener unpractical. It is very easy "to point a moral or adorn a tale" with the mistakes and blunders of either. Book farming, or the attempt to apply science to agriculture without adequate knowledge of the practical conditions involved, is often ludicrous enough in its outcome, but the wholesale mistakes of ignorant practice are of a far more serious nature, needlessly exhausting the fertility of great regions, and turning fruitful plains into partial deserts.

The State Board, as the representative of Ohio agriculture, is committed to both science and practice, and can better mediate between extreme views as to the exclusive value of either than any other organization in the State.

The history of this institution begins with an act passed by the Congress of the United States on July 2d, 1862, donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts. The act is recited below:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land to be apportioned to each State, a quantity equal to thirty thousand acres to each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty: provided, that no mineral lands shall be selected or purchased under the provisions of this act.

SEC. 2. *And be it further enacted*, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections, or subdivisions of sections not less than one-quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such land within the limits of such State; and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said state may be entitled, under the provisions of this act, land scrip to the amount in acres for the sufficiency of its distributive share, said scrip to be sold by said states, and the proceeds thereof applied to the uses and purposes prescribed in this act, and for no other use or purpose whatsoever: provided, that in no case shall any state to which land scrip may be thus issued, be allowed to locate the same within the limits of any other state or of any territory of the United States; but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry at one dollar and twenty-five cents per acre; *and provided further*, that not more than one million acres shall be located by such assignees in any one of the states; *and provided further*, that no such location shall be made before one year from the passage of this act.

SEC. 3. That all the expenses of management, superintendence, and taxes from date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the states to which they may belong out of the treasury of said states, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purpose hereinafter mentioned.

SEC. 4. That all moneys derived from the sale of the lands aforesaid by the state to which the lands are apportioned, and from the sales of the land scrip hereinbefore provided for shall be invested in stocks of the United States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks, and that the moneys so invested shall constitute a perpetual fund the capital of which shall remain forever undiminished (except so far as may be provided in section fifth of this act), and the interest of which shall be inviolably appropriated by each state which may take and claim the benefit of this act to the endowment, support, and maintenance of at least one college, where the leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such a manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

SEC. 5. That the grant of land and land scrip hereby authorized shall be made of the following conditions, to which as well as to the provisions hereinbefore contained the previous assent of the several states shall be signified by legislative act:

1st. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall by any action or contingency be diminished or lost, it shall be replaced by the state to which it belongs, so that the capital of the fund shall remain forever undiminished, and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum not exceeding ten per centum upon the amount received by any state under the provisions of this act may be expended for the purchase of lands for sites or experimental farms whenever authorized by the respective legislatures of said states.

2d. No portion of said fund, nor the interest thereon, shall be applied directly or indirectly under any pretence whatever, to the purchase, erection, preservation, or repair of any building or buildings.

3d. Any state which may take and claim the benefit of the provisions of this act, shall provide within five years at least not less than one college as described in the fourth section of this act, or the grant to such state shall cease, and said state shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchase under the same shall be valid.

4th. An annual report shall be made, regarding the progress of each college, recording any improvements and experiments made, with their costs and results, and such other matters, including state industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail free, by each, to all other colleges which may be endowed under the provisions of this act, and also one copy to the secretary of the interior.

5th. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the states at the maximum price, and the number of acres proportionally diminished.

6th. No state while in condition of rebellion or insurrection against the government of the United States, shall be entitled to the benefits of this act.

7th. No state shall be entitled to the benefits of this act, unless it shall express its acceptance thereof by the legislature within two years from the date of its approval by the President.

SEC. 6. That land scrip issued under the provisions of this act, shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. That the land officers shall receive the same fees, for locating land scrip issued under the provisions of this act, as are now allowed for the location of military bounty land warrants, under existing laws: *provided*, their maximum compensation shall not be thereby increased.

SEC. 8. That the governors of the several states to which scrip shall be issued under this act, shall be required to report annually to congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

On February 9th, 1864, the General Assembly of the State of Ohio passed an act to accept the grant conveyed in the act above given, in the following words:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the assent of said state is hereby signified to the aforesaid act of congress, and to all the conditions and provisions therein contained, and the faith of the state of Ohio is hereby pledged to the performance of all such conditions and provisions.

SEC. 2. This act to take effect and be in force from and after its passage.

Governor John Brough, in his annual message, delivered in January, 1865, announced that certificates of scrip for 630,000 acres of land had been received and placed in the State Treasury. The next step was the passage of

AN ACT

To provide for the sale of land scrip, and other purposes.

[Passed and took effect April 13, 1865. 62 Vol. Stat., 189.]

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the auditor, treasurer, and secretary of state are hereby authorized and directed on or before the first day of May, eighteen hundred and sixty-five, to advertise in such form as they may deem proper, for proposals for the purchase of the land scrip received from the United States, for the establishment of an agricultural college or colleges in the state of Ohio. Such advertisement shall authorize proposals to be received by the auditor, treasurer, and secretary of state, and by the auditor and treasurer in each and every county in the state. The term of said notice shall not be less than ninety days from the date thereof. No proposition shall be received for less than one hundred and sixty acres, nor for a rate of less than eighty cents per acre. [*Repealed April* 5, 1866.]

SEC. 2. If offers should not be received for the whole of said scrip, acceptable to said auditor, treasurer, and secretary of state, the said officers are authorized and directed to again advertise, in like manner, for proposals for the portion remaining unsold. The term of said notice shall be sixty days from date, and be otherwise governed by the regulations hereinbefore provided. [*Repealed April* 5, 1866]

SEC. 3. Upon the acceptance of proposals, and payment thereon, the party entitled thereto shall receive from said officers the amount of scrip so purchased, with a certificate that he has duly purchased and paid for the same; and on presentation of the same to the governor, he shall execute the necessary transfer of the scrip, in accordance with the regulations provided by the general land office therefor.

SEC. 4. The auditor and treasurer of each county in the state shall jointly receive for such service as they may perform under this act, in accordance with their instructions from the auditor, treasurer, and secretary of state, a sum equal to five per centum on all moneys received and paid over by them upon the first three hundred and twenty acres of scrip sold, three per cent. on all moneys so received and paid over for the next three hundred and twenty acres sold, and one per cent. on all receipts for sales after six hundred and forty acres have been sold; and it is hereby made the duty of the auditor and treasurer of each county in the state to perform such services as may be required of them by the auditor, treasurer, and secretary of state, under this act; and the aforesaid county officers shall be paid by the auditor of state out of the money hereinafter appropriated for such purpose.

SEC. 5. Said auditor, treasurer, and secretary of state, on or before the first day of December next, shall make to the governor a full and explicit report of their proceedings under this act; which report the governor shall communicate to the general assembly at its next session. [*Repealed April* 5, 1866.]

SEC. 6. All money received from the sale of land scrip shall be paid into the state treasury, and shall be appropriated and used by the commissioners of the sinking fund for the reduction and payment of the other public debt of the state.

SEC. 7. Upon the amount of money so received for the sale of scrip appropriated for and to be used in the reduction of the other public debt of the state as aforesaid, there shall be allowed, and paid semi-annually on the first days of July and January in each year, interest at the rate of six per cent per annum; which shall be appropriated as provided in the act of congress approved July 2d, 1862, "to the endowment, support, and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts;" and for the prompt and regular payment of said interest, the preservation and appropriation of said fund, and the strict observance and fulfillment of the act of congress before referred to, the faith of the state is hereby irrevocably pledged.

SEC. 8. The commissioners of the sinking fund are hereby authorized and empowered, as fast as the sinking fund will enable them to do so, to reduce the debt called the "agricultural fund," by the purchase of stocks of the United States or of this state, yielding not less than six per centum upon the par value of said stocks, which stocks, when so purchased, shall be transferred to the "state of Ohio, in trust for the agricultural college," and shall be deposited with the treasurer of state, and when so purchased, transferred, and deposited, shall, to the extent of the amount paid for such stocks, reduce the debt thereby created and denominated the "agricultural fund."

SEC. 9. There shall be appointed by the governor, by and with the advice and consent of the senate, five commissioners, no two of whom shall be residents of the same congressional district; two of whom shall be selected so as to represent the agricultural, and two representing the mechanical and manufacturing interests of the state, who shall be required to take and indorse upon their certificates of appointments an oath or affirmation to honestly and faithfully perform the duties imposed by this act; one of said commissioners shall be selected with reference to his military knowledge. [*Repealed.*]

SEC. 10. Said commissioners, after full examination, shall report to the governor by the first of December next, their opinion as to the place for locating said college or colleges; and in forming such opinion, said commissioners shall consider the accessibility of such location to all parts of the state, by the ordinary means of travel, the inducements which may be offered by any locality in the way of donations of land, buildings, money, or other valuable property, for said college or colleges, the practicability of procuring, at reasonable expense, the necessary quantity of land adapted to the use of an experimental farm, with such other considerations as should have influence in the selection of such location. Said commissioners shall also consider and report any propositions which are now or may, within six months, be made, with the inducements offered for the establishment of more than one such college or colleges. [*Repealed April* 5, 1866.]

SEC. 11. Said commissioners shall prepare and submit a detailed plan for the organization of said college or colleges, and the necessary buildings therefor. It shall embrace the proper control and management of the property, the necessary structures, implements, and stock of the farm; the branches and their respective divisions of learning to be taught; the course of studies to be pursued, and their terms and extent; the professorships required to be established; the character and extent of experimental husbandry upon the farm; the propriety and feasibility of connecting experimental studies in the mechanic arts; the probable expenditures for these respective purposes, and the probable annual expenses of conducting said institution; with such other matters as they may deem important or valuable as connected therewith. [*Repealed April* 5, 1866.]

SEC 12. Said commissioners shall submit to the governor, by the first day of December next, their said plan of organization, with a full report of their proceedings under the requirements of this act, which the governor shall communicate to the general assembly at its next session. [*Repealed April* 5, 1866.]

SEC. 13. Said commissioners shall receive no compensation for their services, but may be allowed their necessary expenses in the discharge of their official duties. [*Repealed April* 5, 1866.]

SEC. 14. For the purpose of carrying into effect the provisions of this act, the sum of five thousand dollars is hereby appropriated from any money in the treasury not otherwise appropriated. [*Repealed April* 5, 1866.]

SEC. 15. This act shall take effect and be in force from and after its passage.

In a report to the governor, dated December 20, 1865, the commissioners announce the sale of scrip for 11,360 acres, and declare their opinion that, unless greater powers should be conferred upon them, the scrip of Ohio would not all be sold in less than ten years, as other States were selling similar scrip below the minimum price to which they were confined.

In accordance with this suggestion and these facts, the Legislature passed an act on April 5, 1866, to amend the act aforesaid, so as to remove the restriction of a minimum price of eighty cents per acre.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section one of the aforesaid act be amended so that the same shall read as follows: Section 1. That the auditor, treasurer, and secretary of state are hereby authorized and directed to advertise, as often as they may deem the same advisable, and in such form as to them may seem proper and necessary to the prompt disposition of the land scrip received from the United States for the establishment of an agricultural and mechanical college or colleges in the state of Ohio, for proposals for the purchase of the same, in quantities not less than one hundred and sixty acres, such proposals for purchase to be made either to said auditor, treasurer, and secretary of state, or to the auditor and treasurer of any county of the state, subject to the limitations and restrictions from time to time fixed by said auditor, treasurer, and secretary of state not inconsistent with this act.

SEC. 2. That section two of the aforesaid act be so amended as to read as follows: Section 2. Said auditor, treasurer, and secretary of state are hereby authorized to sell or cause to be sold said land scrip at the best price they can obtain for the same, and to employ a suitable person or persons to aid them in making such sales, and to pay to such persons such commissions on sales made by them, as they may deem adequate to secure prompt and vigorous efforts to effect sales. And they are further authorized to accept propositions for the purchase of said scrip in quantities not less than fifty thousand acres of land, on terms of payment of not less than one-fourth in hand, and the remainder in payments not more extended than one-fourth in two years, one-fourth in four years, and the remaining one-fourth in six years; or in quantities of not less than ten thousand acres of land, on the following terms of payment: Not less than one-fourth in hand, and the remainder in payments not more extended than one-fourth in one year, one-fourth in two years, and the remaining one-fourth in three years, with interest on the deferred payments from the date of purchase; and the deferred payments to be secured by mortgage upon real estate situate within the state of Ohio, or deposit of the bonds of this state or of the government of the United States; *provided*, also, that all contracts to pay commissions on sales, or for the sale of scrip on time, shall be approved by the governor, in writing, before the same shall be valid and binding on the state.

SEC. 3. That section five of said act be so amended as to read as follows:

Section 5. Said auditor, treasurer, and secretary of state shall, annually, on the first Monday of December, make to the governor a full and explicit report of all their proceedings, and of the proceedings of county auditors and treasurers, under this act, which report the governor shall communicate to the general assembly at the next ensuing session thereof.

SEC. 4. That the first, second, fifth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, and fifteenth sections of the aforesaid act be and the same are hereby repealed.

SEC. 5. This act shall take effect and be in force from and after its passage. [S. & S. 645–650.]

On December 10th of the same year the commissioners reported to the Legislature the sale of all the scrip, the great bulk of it being sold at fifty-three cents per acre. The total proceeds of the sales were $342,450.80. This sum was paid into the State Treasury during 1866 and 1867, and interest on it was computed from the date of payment at six per cent.

The location of the college now became a subject of interest, which led to the following legislation:

AN ACT

Relative to the establishment of the Ohio Agricultural and Mechanical College

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the governor of Ohio, *ex-officio*, the president of the Ohio state board of agriculture, *ex officio*, and five other persons, so chosen as to represent all the industrial classes of the state, to be appointed by the governor, with the consent of the senate, are hereby constituted a board of trustees, whose duty it shall be to receive proposals and report to the next session of this general assembly, such proposals as may have been received, and their opinion as to the place for locating an agricultural and mechanical college for the state of Ohio, in accordance with an act of congress, approved July 2, 1862, entitled "an act donating lands to the several states and territories, which may provide colleges for the benefit of agriculture and the mechanic arts."

SEC. 2. Said trustees are hereby authorized to receive proposals for donations of land, building, and money in trust for the state of Ohio, for the location and establishment of a college as contemplated by the act of congress referred to in the first section of this act.

SEC. 3. The trustees shall receive no *per diem* but shall have all their necessary expenses paid while actually in the service of the state.

SEC. 4. This act shall take effect from and after its passage, and the governor shall immediately thereafter notify said persons of their appointment, and designate a day for their meeting in the city of Columbus, for the organization of said board.

April 5, 1866. [63 v. 102.]

The trustees appointed under this act were Darwin Gardiner, David Taylor, Peter Thatcher, C. L. Poorman, and Miles Greenwood. In June, 1865, they received propositions, in regard to the location of the College, from Miami University, Oxford, and Farmers' College, near Cincinnati, and in October similar proposals from Mt. Union College, from the village of Kent, and the town of Worthington.

On the first of December, 1865, in accordance with the requirements of the act under which they were appointed, they made their report to Governor Anderson. Two reports, in fact, were presented. The majority report, signed by four of the commissioners, recommended that the land scrip, or the funds arising from its sale, should be equally divided, and that half should be devoted to the reorganization of Miami University, so that its courses of study should be brought into harmony with the terms of the congressional grant, and that the other half should be devoted to the endowment of a college in the northern part of the State in the interests of agriculture and the mechanic arts. The minority report, presented by Miles Greenwood, recommended the acceptance of the proposition of Farmers' College. Neither report was adopted by the Legislature.

From the time when the State accepted the land grant, the use to be made of the funds resulting from it was the subject of earnest and prolonged discussion in the Legislature, by the press, and throughout the State at large. A division of the fund among colleges already established in the State was strenuously urged by many, and as strenuously opposed by more. The State Board of Agriculture, especially, labored actively and persistently to prevent any such division.

The efforts to secure a division were gradually abandoned, as it came to be seen that public sentiment demanded the establishment of an institution unfettered by tradition. and different in character from any at the time existing in the State. By the end of the year 1867, at least, it was generally conceded that a separate and independent college must be established upon this fund.

This fund is the financial basis of the present College. It has been augmented by about forty-seven per cent. of itself through the additions of interest, simple and compound, until at the opening of the institution in 1873 it amounted to $500 000. Its security is established by its being made a part of the irreducible debt of the State. The rate of interest which it bears is six per cent.

After the selling of the land scrip, the location and plan of organization of the future College, received the prolonged attention of successive Legislatures

On March 7, 1868, a joint resolution was introduced into the House of Representatives, which was subsequently passed, appointing a joint committee from the Senate and the House of Representatives, with authority to receive propositions for the location of the College, and to report the same to the Legislature. The resolution is given below :

JOINT RESOLUTION

To provide for taking immediate steps to agree upon the location of the Ohio Agricultural and Mechanical College, and for the appointment of a joint committee on the subject.

WHEREAS, The congress of the United States, by an act passed July 2d, 1862, entitled "an act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," donated to the state of Ohio, landscrip; and,

WHEREAS, The general assembly of Ohio, by an act passed February 9th, 1864, (L. of O., vol. 61, p. 7), accepted said donation subject to all the conditions and provisions contained in said act, and pledged the faith of the state of Ohio to the performance of all such condiitons and provisions; and,

WHEREAS, The state of Ohio has received from the United States, land-scrip for the purpose of establishing an agricultural college or colleges in said state; and,

WHEREAS, The said land-scrip has been sold, and there is now in the state treasury, to the credit of the agricultural college fund, the sum of $342,450 80; and,

WHEREAS, One of the provisions of the act of congress making such donation, requires each state which may claim the benefit of said act, to provide not less than "one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life;" and,

WHEREAS, The time for providing such college or colleges will expire on the 2d day of July, 1872, at which time, unless such college or colleges are provided, the grant to the state of Ohio will cease, and said state will be bound to pay the United States the amount so received; therefore, be it

Resolved [*by the General Assembly of the State of Ohio*], 1st. That it is important for the general assembly of Ohio to take immediate steps to provide one college for the objects and purposes aforesaid.

2d. That to this end a joint committee of the senate and house of representatives, consisting of four on the part of the senate and eight on the part of theho use be appointed, with authority to receive propositions for sites for the location of such college, and examine the same; also propositions for experimental farm, and proposals of donations of such sites and farms; and also donations towards the erection of suitable college buildings.

3d. That the said committee shall have authority to meet, for the transaction of business, during any adjournment of the general assembly, at such time and place as the committee may agree upon.

4th. That the said committee shall report, at as early a time as possible, by bill or otherwise.

Adopted March 30, 1868. [65 v. 292.]

The committee, at the ensuing session, reported propositions for location from Worthington, Wooster, Oxford, Urbana, London, and Newark, with liberal offers of donations of land and money from each of the competing towns. Majority and minority reports were brought in, the former recommending the acceptance of the proposition of Urbana, and the latter of Wooster.

Neither report secured favorable action in the Legislature. Various attempts to settle the questions involved were afterwards made without success, until, in March 22, 1870, a bill was passed by the Legislature, the date of which may be taken as the initial date of the present institution.

Before that date, however, the following legislation was had:

AN ACT

To authorize the investment of interest accumulating on the agricultural college fund.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the auditor of state be and is required to compute the interest which has accrued and will accrue on the agricultural college scrip fund since the same has been sold, to July first, one thousand eight hundred and seventy, compounding the same by semi-annual rests on the first day of January and the first day of July in each year; and on the fifteenth day of June, eighteen hundred and seventy, to transfer the sum so arising to the said college fund, and invest the same in the interest bearing bonds of the state, in the same manner as the principal of the said fund is now invested.

SEC. 2. That on the first day of July, eighteen hundred and seventy, and every six months thereafter (viz., on the first day of January and July respectively), the auditor of state shall invest the interest of said funds falling due in the same manner as the principal is now invested.

SEC. 3. This act to take effect and be in force from and after its passage.

Passed February 10, 1870. [67 v. 15.]

The following is the act referred to as constituting the initial date of the College:

AN ACT

To establish and maintain an agricultural and mechanical college in Ohio.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That a college, to be styled the Ohio Agricultural and Mechanical College, is hereby established in this state, in accordance with the provisions of an act of congress of the United States, passed July 2d, 1862, entitled "an act donating public lands to the several states and territories which may provide colleges for the benefit of agricultural and mechanic arts," and said college to be located and controlled as hereinafter provided. The leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agricultural and mechanic arts.

SEC. 2. The government of said college shall be vested in a board of trustees, to consist of one from each congressional district of this state, who shall be appointed by the governor, by and with the advice and consent of the senate. The president of the state board of agriculture shall be ex-officio member of said board. [*Repealed April* 16, 1874.]

SEC. 3. The members of the board of trustees, and their successors, shall hold their office for the term of six years each; provided, that at the first regular meeting of said board, the said members shall determine by lot, so that as nearly as may be one-third shall hold their office for two years, one-third for four years, and one-third for six years from the date of the first meeting of the board, or until their successors are appointed and qualified. In case a vacancy occurs by death, resignation, or otherwise, the appointment shall be for the unexpired term. The trustees shall receive no compensation for their services, but shall be entitled to reasonable and necessary expenses while in the discharge of their official duties. [*Repealed April* 16, 1874.]

SEC. 4. The trustees and their successors in office shall be styled the "Board of Trustees of the Ohio Agricultural and Mechanical College," with the right as such of suing and being sued, of contracting and being contracted with, of making and using a common seal, and altering the same at pleasure.

SEC. 5. The board of trustees shall have power to adopt by laws, rules, and regulations for the government of said college; to elect a president; to determine the number of professors and tutors, elect the same, and fix their salaries. They shall also have power to remove the president or any professor or tutor whenever the interests of the college, in their judgment, shall require; to fix and regulate the course of instruction, and to prescribe the extent and character of experiments to be made.

SEC. 6. The board of trustees shall annually appoint an executive committee of not less than three of their own members, who, when said board is not in session, shall have the management and control of the affairs of said college, under the direction of the board, and shall furnish a full report of their proceedings at every regular meeting of the board, and at such other times as the board may direct. [*Repealed April* 16, 1874.]

SEC. 7. The college shall be open to all persons over fourteen years of age, subject to such rules and regulations and limitations, as to members from the several counties of the state, as may be prescribed by the board of trustees; provided, that each county shall be entitled to its just proportion, according to its population. The board may provide for courses of lectures, either at the seat of the college or elsewhere in the state, which shall be free to all.

SEC. 8. The board of trustees shall have the general supervision of all lands, buildings, and other property belonging to said college, and the control of all expenses therefor; provided always that said board shall not contract any debt not previously authorized by the general assembly of the state of Ohio.

SEC. 9. The board of trustees shall annually elect one of their number chairman, and in the absence of the chairman shall elect one of their number temporary chairman, and shall have power to appoint a secretary, treasurer, and librarian, and such other officers as the interests of the college may require, who may or may not be members of the board, and shall hold their offices for such term as said board shall fix, subject to removal by said board, and shall receive such compensation as the board shall prescribe. The treasurer shall, before entering upon the duties of his office, give bond to the state of Ohio in such sum as the board may determine, which bond shall not be for a less sum than the probable amount that will be under his control in any one year, conditioned for the faithful discharge of his duties and the payment of all moneys coming into his hands, said bond to be approved by the attorney-general of the state.

SEC. 10. The board of trustees shall have power to secure a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the chief geologist of the state to collect and deposit in such place as the trustees may direct, a full and complete set of specimens as collected by him or his assistants, for the benefit of said college. The board shall make provision for a library, apparatus, and arms and accoutrements, and for increasing and preserving the same. [*Repealed April* 20, 1877.]

SEC. 11. The board of trustees shall have power to receive and hold in trust, for the use and benefit of the college, any grant or devise of land, and any donation or bequest of money or other personal property, to be applied to the general or special use of the college; all donations or bequests of money shall be paid to the state treasurer, and invested in the same manner as the endowment fund of the college, unless otherwise directed in the donation or bequest.

SEC. 12. The first meeting of the members of the board shall be called by the governor as soon after the appointment of said board as he may deem advisable, to be held at Columbus, Ohio; all succeeding meetings shall be called in such manner as said board may prescribe; said board shall meet at least once annually at the college building. A majority of the board of trustees shall constitute a quorum to do business; provided, it shall require a majority of all the board to elect or remove a president or professor. [*Repealed April* 20, 1877.]

SEC. 13. The title for all lands for the use of said college shall be made in fee simple to the state of Ohio, with covenants of seizin and warranty, and no title shall be taken to the state for purposes aforesaid until the attorney-general shall be satisfied that the same is free from all defects and incumbrances.

SEC. 14. The board of trustees shall cause a report to be made annually to the governor, of the condition of said college; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, teachers, and other officers, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an estimate of the expenses of the ensuing year; a full transcript of the journal of the proceedings of the board for the past year, the progress of said college, recording any improvements and experiments made, with their cost, and the results, and such other matters as may be supposed useful; one copy, when printed and bound, shall be transmitted by mail, free, to all other colleges which may be endowed under the provisions of said act of congress, and also one copy to the secretary of the interior. [*Repealed April* 20, 1877.]

SEC. 15. The attorney-general of the state shall be the legal adviser of said board of trustees, and he shall institute and prosecute all suits in behalf of the same, and shall receive the same compensation therefor as he is entitled to by law for suits brought in behalf of the asylums of the state.

SEC. 16. All funds, together with the interest now accumulated thereon, derived from the sale of land scrip issued to the state of Ohio by the United States in pursuance of the act of Congress aforesaid, shall be invested in registered bonds of the state of Ohio, or of the United States, by the authority now having control of the same; which bonds shall be and remain in the custody of the state treasurer intact, unless one-tenth shall be appropriated by the general assembly for the purchase of land, as provided in the act of congress, who shall pay over the income thereof as it may accrue to the treasurer of said college upon the order of the auditor of state, made upon the requisition of the board of trustees; to be by the board of trustees appropriated to the endowment, support and maintenance of the college, as provided in the act of Congress as aforesaid. [*Repealed April* 20, 1877.]

SEC. 17. It shall be the duty of the board of trustees to permanently locate said Agricultural and Mechanical College upon lands, not less than one hundred acres, which in their judgment is best suited to the wants and purposes of said institution, the same being reasonably central in the state, and accessible by railroad from different parts thereof, having regard to healthiness of location, and also regarding the best interests of the college in the receipt of moneys, lands or other property donated to said college by any county, town, or individual, in consideration of the location of said college at a given place: Provided, it shall require a three-fifths vote of the trustees to make said location; and provided, further, that said location shall be made on or before the fifteenth day of October, 1870; provided further, that any person acting as a trustee, who shall accept or receive, directly or indirectly, any sum or amount from any person or persons, to use their influence in favor of the location of said college at any particular point or place, shall be held to be guilty of a misdemeanor, and on conviction thereof by any court of competent jurisdiction, shall be fined in any sum not less than one thousand nor more than ten thousand dollars; provided further, that in the location of said college the said trustees shall not in any event incur any debt or obligation exceeding forty thousand dollars; and if, in their opinion, the interests of the college can not be best promoted without a larger expenditure for the location than that sum, then they may delay the permanent location of the same until the third Monday of January, 1871, and report their proceedings and conclusions to the general assembly; provided further, that said college shall not be located until there are secured thereto for such location donations in money, or unincumbered lands, at their cash valuation, whereon the college is to be located, or in both money and such lands, a sum equal to at least one hundred thousand dollars.

SEC. 18. This act shall take effect and be in force from and after its passage.

Passed March 22, 1870. (67 v. 20)

Under this act a board of nineteen Trustees was appointed by Governor R. B. Hayes, and his appointments were confirmed by the Senate. The following gentlemen composed the board, arranged in the order of their Congressional Districts:

1st	District	Aaron F. Perry.
2d	"	Joseph F. Wright.
3d	"	Richard C. Anderson.
4th	"	William B. McClung.
5th	"	William Sawyer.
6th	"	James M. Trimble.
7th	"	Joseph Sullivant.
8th	"	Thomas C. Jones.
9th	"	Warren P. Noble.
10th	"	James W. Ross.
11th	"	Ralph Leete.
12th	"	Daniel Keller.
13th	"	Marvin M. Munson.
14th	"	Norton S. Townshend.
15th	"	Valentine B. Horton.
16th	"	John C. Jamison.
17th	"	Cornelius Aultman.
18th	"	John R. Buchtel.
19th	"	Henry B. Perkins.

The Board held its first meeting in Columbus on May 11, 1870, and effected a permanent organization by the election of Valentine B. Horton, President; R. C. Anderson, Secretary; and Joseph Sullivant, Treasurer.

By the following legislative act, passed April 18, 1870, the several counties of the State were authorized to raise money to secure the location of the College:

AN ACT

To authorize the several counties of the state to raise money to secure the location of the Ohio Agricultural and Mechanical College.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the commissioners of any county in this state desiring to secure the location of the Ohio Agricultural and Mechanical College by making donations therefor, are hereby authorized and empowered to raise money for such donation by tax on all taxable property in such county, as listed on the county duplicate for taxation, the amount of which proposed donation shall be fixed by said commissioners.

SEC. 2. That such tax shall not exceed two mills on the dollar of the taxable property of the county in any one year, nor shall the aggregate of all levies for such purposes exceed ten (10) mills on the dollar.

SEC. 3. No such tax shall be levied or donation made until the question as to the amount to be donated has first been submitted by the county commissioners to the qualified voters of such county at some general or special election, a notice of which (specifying the amount to be donated) has been given at least thirty days previous to said election, in one or more newspapers published and in general circulation in the county; which election shall be held at the usual places of holding elections, and conducted in all respects, as far as may be, as other elections, except that the returns shall be made to the county commissioners, at the auditor's office; and those voting at such election in favor of said tax shall have written or printed on their ballots the words, "College Tax—Yes," and those voting against same the words, "College Tax—No." And said commissioners shall meet at said auditor's office on the fourth day next after the said election, and canvass the votes; and if it appear that said tax is approved by a majority of the qualified electors voting at such election, then it is hereby made the duty of the county commissioners of said county to levy a special tax on all the taxable property of said county, to raise the sum donated by said vote, in accordance with section two of this act; and the money arising therefrom, when collected, shall be applied to no other purpose but the payment of bonds and interest as hereinafter provided for; and said special tax shall be entered upon the county duplicate, and be collected in like manner as other taxes are collected.

SEC. 4. That to anticipate the collection of the tax authorized by this act, and the use of the money to be raised thereby, the county commissioners, on the acceptance of the donation herein contemplated, are hereby authorized and required to issue and negotiate the bonds of such county, in sums of not less than five hundred dollars each, payable (within ten years) at such times, and bearing interest at a rate not exceeding eight per cent., payable semi-annually, as the commissioners shall determine, which bonds shall not be sold or donated at less than their par value; and the proceeds thereof shall, on their receipt, be paid by said commissioners to the treasurer of said college to the amount of said donation.

SEC. 5. This act shall take effect and be in force from and after its passage.

Passed April 18, 1870. [67 v. 95.]

On June 4 of the same year the Executive Committee of the Board of Trustees issued an address to the people of the State, prepared by Hon. V. B. Horton, President of the Board, and chairman of said committee, setting forth the aims, purposes, and wants of the Ohio Agricultural and Mechanical College, and inviting the citizens of the State, through their counties, to raise the necessary funds for providing land, buildings, and outfit for the College.

The following named counties competed for the location under the above act: Champaign, Clarke, Franklin, Montgomery.

Champaign county offered $200,000, in 8 per cent. county bonds; Clarke offered the same amount; Franklin offered $300,000, in 7 per cent bonds, and Montgomery offered, by pledges of several of her prominent citizens, $400,000, in 8 per cent. bonds. After prolonged and thorough discussion, the proposition of Franklin county was accepted, and on October 13, 1870, the College was located within the limits of the city of Columbus, on a farm of about 317 acres of excellent land. The donation from Franklin county was increased by contributions from citizens of Columbus, and by two of the railroads entering here, to the amount of about $28,000. The railroad companies contributing were the Cleveland, Columbus and Indianapolis Railroad, and the Pittsburgh, Cincinnati and St. Louis Railroad.

A site for a College building was selected, and architects were invited to furnish plans for such building. The plan prepared and offered by Mr. Jacob Snyder, of Akron, was finally adopted, and the building was put under contract, to be completed in 1872, at a cost of $112,450. A boarding-hall and dormitory was also ordered, at an estimated cost of $20,000, at a somewhat later date. A second dormitory, providing accommodations for twenty students who may desire to board themselves, has been since erected.

The character of the College building can be learned from the following description by the architect:

The Agricultural and Mechanical College of Ohio is designed, when completed, to be a three-story building, besides the basement and attic, and is to be of brick, with stone dressings, above the basement story. The latter is to be entirely of stone, elevated seven feet nine inches from the grade line, thus admitting ample light to accommodate the lower apartments. The attic story extends partly into the roof space, and is well lighted by means of gable windows. The plan of the building is made up of a central building having two connecting and two terminal wings. The central building is sixty-seven feet front by one hundred and nine feet deep, including the projection of the main tower on the front, which is eight feet from the face of the front wall. The main tower has a base of twenty-one feet six inches square besides the projections of buttresses, and a height of one hundred and four feet to the top of crown. The central building is flanked by the two connecting wings, which are forty-one feet front by fifty-eight feet deep. The height of the connecting and terminal wings, except their roofs, is equal, and from grade line to top of crown is fifty-four feet and nine inches. The height of the central building from corresponding points is fifty-eight feet three inches. The front portion of central wing, on its first main floor, contains the office and reception room, the College library room, and their complemental apartments. The upper stories of this portion of the central building are to be occupied by recitation and professors' rooms.

The rear of the central building contains two large amphitheatres of fifty-one by sixty seven feet, occupying the entire height of the three principal stories. The elevated roof of this portion of the building affords sufficient height to admit of two society halls in the attic, so arranged as to be used conjointly for the purposes of one large hall if desired. The connecting wings, besides their complemental apartments, contain professors' rooms in all their principal stories. The terminal wings have no divisions above the basement, the rooms being the entire size of the wings within their walls. They are designed to be used as recitation and work-rooms. The apartments of the basement not required for heating are designed to be used for purposes similar to those of the terminal wings.

The building, including the projections of the buttresses, has a frontage of two hundred and thirty-five feet, and will accommodate from four to five hundred students.

The dormitory and boarding-hall provides accommodations for seventy-five students.

The plan of study to be pursued in the College was made the subject of very earnest discussion in the Board of Trustees from the date of its organization. Quite divergent views were at first held by different members, but on January 6, 1871, they united in adopting the general plan presented and advocated by Joseph Sullivant, Esq., of Columbus. This plan had for its aim the establishment of a scientific school of a liberal character. The following departments were included in it:

1. Agriculture.
2. Mechanic Arts.
3. Mathematics and Physics.
4. Chemistry.
5. Geology, Mining, and Metallurgy.
6. Zoölogy and Veterinary Science.
7. Botany and Horticulture.
8. English Language and Literature.
9. Modern and Ancient Languages.
10. Political Economy and Civil Polity.

It was not designed in the action taken that these subjects should necessarily stand in the same connections in which they are here placed, but only that the general range of instruction thus indicated should be offered by the College. In point of fact, but few of the departments have been permanently established within the limits named above, but all of these subjects, and more, are now taught in the College, as will presently appear. To Mr. Sullivant was also assigned the equipment of laboratories and cabinets, a fund of $25,000 being set aside for this general purpose, including the necessary furniture of the building. It is but justice to add that to his intelligent and unselfish interest the College owes a large debt, both for the breadth of its plan of organization and the equipment with which its departments have been supplied.

The selection of a Faculty commanded the early attention of the Board. On March 10, 1871, a virtual offer of the presidency of the institution was made to General Jacob D. Cox, of Cincinnati, but the offer was declined. The committee on Faculty next reported the name of Hon. James W. Patterson, formerly professor in Dartmouth College, and, at the time representing New Hampshire in the Senate of the United States, for this position. Mr. Patterson was elected to the office on October 10, 1872, but after holding the matter for some time under advisement, he also declined the appointment.

The following named gentlemen were elected professors at a meeting of the Trustees held on January 2, 1873:

Thomas C. Mendenhall, of Columbus, Professor of Physics and Mechanics.
Sidney A. Norton, of Cincinnati, Professor of General and Applied Chemistry.
Edward Orton, of Yellow Springs, Professor of Geology, Mining, and Metallurgy.
Joseph Millikin, of Hamilton, Professor of English and Modern Languages.
W. G. Williams, of Delaware, Professor of Latin and Greek Languages.

At the same meeting of the Trustees, but at a somewhat later date, Norton S. Townshend, of Avon, was elected Professor of Agriculture, he having previously resigned his position on the Board of Trustees to accept it.

Professors Mendenhall, Norton, Millikin, and Townshend accepted their appointments. Professor Williams also signified his acceptance, but was subsequently released at the request of the Trustees of the Ohio Wesleyan University, with which he was at the time connected. Professor Orton declined the Professorship of Geology, but in April succeeding the Presidency of the institution was offered to him, which he accepted in May. The Professorship of Geology was also assigned to him.

During the summer of 1873, Professor R. W. McFarland, of Oxford, was called to the Professorship of Mathematics, and the subject of Civil Engineering was also assigned to his department.

Mr. John H. Wright, a recent graduate of Dartmouth College, was appointed Assistant Professor in the Department of Languages, and to him were assigned all of the classes in Latin and Greek.

The College was opened for the reception of students on September 17, 1873.

In January, 1874, Prof. Albert H. Tuttle was appointed by the Executive Committee to the chair of Zoölogy, and in June the appointment was confirmed by the Board. At the same time, Thomas Mathew, of Columbus, was appointed Instructor in Drawing, Free-hand and Mechanical, and also in Photography and Lithography. In June, 1875, William Colvin, of Cincinnati, was appointed Professor of Political Economy and Civil Polity, and the Science of Accounts was also assigned to his department. Miss Alice Williams was, at the same time, made an assistant in the Department of English and Modern Languages.

By an act of the Legislature, the unsurveyed lands in the Virginia Military District of Ohio were turned over, with due restrictions, to the College. Much was expected from this source by some friends of the College, and active measures were taken by the Board to realize whatever advantages were contained in this legislation. Up to the present date, however, the receipts have not been largely in excess of the expenditures. It is deemed proper to insert the act here, as much discussion and difference of opinion in regard to the matter has been made apparent in some parts of the district.

AN ACT

Accepting the act of Congress of the United States, approved February 18, 1871, ceding to the State of Ohio certain lands in the Virginia Military District, and to provide for the disposal of the same, and to repeal certain acts hereinafter mentioned.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the unsurveyed and unsold lands ceded to the state of Ohio by a certain act of congress of the United States, approved February 18th, 1871, situate and being in the Virginia Military District between the great Scioto and the Little Miami rivers, in said state, be and the same are hereby accepted by the state of Ohio, subject to the provisions of said act.

SEC. 2. That the trustees of the Ohio Agricultural and Mechanical College are hereby authorized to demand from all persons who have destroyed or converted any timber growing upon the lands ceded to the state of Ohio, as stated in the act to which this is supplementary, since the date of said act of congress ceding said lands to the state of Ohio, full compensation for the timber so destroyed or converted, and for all damages, and if payment shall be refused, to institute proper proceedings in the name of said Ohio Agricultural and Mechanical College, in any court of competent jurisdiction, to recover the same, with damages and the cost of suit: provided, that the provisions of this section shall not apply to timber taken from the one hundred and sixty acres by any person who shall obtain the title to the same under section three of this act.

SEC. 3. The title of said land is hereby vested in the trustees of the Ohio Agricultural and Mechanical College, for the benefit of said college; and said trustees are hereby required to cause a complete survey of said lands to be immediately made, and a correct plat thereof to be returned to said trustees, and to ascertain and set off, in reasonably compact form, by accurate boundaries to each occupant who was in actual possession of and living upon any of said lands at the time of the passage of said act of congress, as provided therein, or their heirs and assigns, a tract not exceeding forty acres; and upon the payment, by the claimant, of the cost of surveying and making the deed, the said trustees shall make and deliver to said claimant a deed for said tract; anp if any such occupant shall have been in such actual possession of more than forty acres, and is desirous of holding the same, he shall be entitled to have, in addition to said forty acres, any number of acres not exceeding, with said forty acres, the number of one hundred and sixty acres, to be in reasonably compact form, by paying for the said excess over forty acres, the sum of one dollar per acre; and if any claimant under the provisions of this act shall desire to purchase any tract of land adjoining said forty acres, not exceeding, including said forty acres, the amount of one hundred and sixty acres, of which said claimant shall have been in actual possession, but does not desire to purchase the same at one dollar per acre, said trustees, upon notice by said claimant, shall cause said tract or part of tract to be sold separate from other tracts of land at a valuation fixed upon by the appraisers named in this act, payable one-third at the date of the survey, and the residue in two equal annual installments, with interest at six per cent., payable annually, and upon full payment being made, with the cost of survey and conveyance, said trustees shall make and deliver to such claimant, his or her heirs or assigns, a deed for said excess over said forty acres: provided, that any person claiming the benefit of the provisions of this section as occupant, shall comply in all respects with, and be subject to the provisions of the thirteenth section of the act of congress, approved September 4, 1841, entitled an act to appropriate the proceeds of the sales of the public lands and to grant pre-emption rights, and to the rules and regulations of the general land office of the United States relating to proof for the establishment of pre-emptor's claims: provided, however, that the affidavits required by said thirteenth section of said act of congress may be made before any justice of the peace or other officer authorized to administer oaths.

SEC. 4. All the unsurveyed and unsold lands in said military district, not occupied as aforesaid, shall be divided by said trustees into such tracts, not exceeding five hundred acres in any one boundary, as will be most advantageous, reference being had to the quality of said lands and the uses to which they will be applied; the boundaries to all such tracts and divisions shall be accurately surveyed, and the lines of each tract plainly marked, and substantial stone monuments firmly placed at the principal corners. The character of the soil, water-courses, elevation of hills, timber, ledges, or stratas of the Waverly building stone, iron ore, fire-clay, and limestone, shall be fully noted by the surveyors on their plats and in their field-books. All the tracts so divided and surveyed shall be numbered in consecutive order, commencing with the tracts in Adams county, and so continuing until all said lands in said district shall be platted and numbered; which numbers shall be shown upon the plats, and the said plats shall correctly indicate all township lines. The said lands, when so divided, surveyed, and numbered, shall be appraised in separate tracts at their true value in money, by three qualified freehold residents in said state, to be summoned by said trustees, or any committee of theirs. Said appraisers, before entering upon their duties, shall take and subscribe an oath before competent authority honestly and impartially to appraise all such lands, and to perform all other duties in relation thereto; they shall each be paid two dollars a day for their services, and their expenses allowed them; they shall make due return of all their appraisements to said trustees, which, with all said plats and surveys, shall be delivered by them to the auditor of state, and the same shall be recorded in the office of said auditor in suitable books to be provided for such purpose, which, with all such original plats, surveys, and papers, shall form a part of the public records of the state in the land department of said office.

SEC. 5. And the said trustees are hereby authorized and required to sell all of said lands at public or private sale, at a price not less than the appraised value thereof, on such terms for cash and credit as may be agreed upon between the purchaser and said trustees or any authorized agent of theirs: provided, that the first payment shall, in every case, be not less than one-third of the appraised value of such tract; all deferred payments shall bear six per cent. interest, to be paid annually, and said trustees may, in their discretion, extend subsequent annual payments through a period not exceeding five years. All public sales of said lands shall be by auction, at the front door of the court-house of the county in which these lands so offered lie, after having been advertised five consecutive weeks in a newspaper published and generally circulated in such county; such notices of sale shall contain a sufficient description of the premises to clearly identify the same, with a statement of the terms of payment and the amount of appraisement, and all such public sales shall be made at such times as said trustees shall deem expedient; and in case such land, or any tract thereof, shall not sell for the amount of the appraisement at such public sale, then upon the same being again offered as aforesaid at public sale, the same may be sold for any sum not less than three-fourths of the appraisement: provided, that no trustee of said college or appraiser of said land shall be the purchaser of any of said lands at any such sale or sales, either directly or indirectly. The said trustees shall cause all contracts for the sale of said lands to be printed or written in a book or books, stating the consideration and terms of all sales, which said contract shall be signed in duplicate by the said trustees or any authorized agent of theirs, and by the purchaser or purchasers, one copy of which shall be preserved in said book, and the other shall be delivered to the purchaser at the time the same shall be signed; and every purchaser shall execute his promissory note or notes, with interest, payable as aforesaid, for all deferred payments, which notes shall be non-negotiable, and payable to said college at such place or places as may be directed by said trustees; and upon full payment being made by the purchaser, his heirs or assigns, for any such land, every such person shall be entitled to receive a conveyance therefor in fee simple by deed of said trustees, executed by the president of the board, under the corporate seal of said college; and all lands disposed of under the provisions of this act shall be returned by said trustees to the auditors of the counties in which they are situate, and by them be placed on the duplicate for taxation.

SEC. 6. The proceeds of the sales of all such lands, after payment out of the same of all the necessary expenses of survey and sale, shall be certified into the treasury of said state as provided by law, and the same be placed to the credit of the irreducible fund of said college, and shall form a part of said irreducible debt of the state, on which interest shall be computed semi annually, and paid to said college as may be ordered by the board of trustees; and they shall annually report to the governor a detailed statement of receipts and disbursements in the execution of the trusts created under the provisions of this act.

SEC. 7. The act entitled an act to sell lands ceded to the state of Ohio by the congress of the United States, by act of congress approved February 18, 1871, passed March 26, 1872, and the act supplementary thereto and amendatory thereof, passed April 29th, 1872, be and they are hereby repealed: provided, that the passage of this act shall in no wise affect the validity of the transactions of said board of trustees, or rights vested in any person, under the provisions of said acts; and this act shall take effect and be in force from and after its passage.

Passed April 3, 1873. [70 v. 107.]

Early in 1874 a reorganization of the board of trustees was effected, under which the following named gentlemen were appointed by Governor William Allen and confirmed by the Senate:

Ralph Leete	Lawrence county.
Alexander Waddle	Clarke county.
Warren P. Noble	Seneca county.
William Larwill	Crawford county.
Joseph Sullivant	Franklin county.

In June, 1876, Assistant Professor John H. Wright, for the purpose of pursuing his studies in Europe, resigned the place which for three years he had satisfactorily filled. To the position thus vacated Josiah R. Smith, A.B., a graduate of Amherst College, and at this time an assistant teacher in the Columbus High School, was appointed. In the same year First Lieutenant Luigi Lomia, of the Fifth United States Artillery, was, pursuant to the request of the Board, detailed by the Secretary of War to take charge of the military instruction which the institution is required to give. These gentlemen entered upon the discharge of their duties at the opening of the fall term in the above-named year.

The board of trustees made military drill obligatory on the part of all the young men of the college except those who should be excused on account of religious scruples or physical disability, and the War Department of the United States furnished arms, ammunition, and accoutrements to supply all demands.

A second reorganization of the board of trustees was effected in April, 1877, by which the board of trustees was increased from five to twenty, so as to include one member from each congressional district of the State. The following members were appointed by Governor Thomas L. Young:

1st	District	Alfred Gaither.
2d	"	C. Kinsinger.
3d	"	Cyrus Falconer.
4th	"	R. P. Finley.
5th	"	J. P. Schmeider.
6th	"	W. H. Scott.
7th	"	Herman Hoover.
8th	"	A. C. Deuel.
9th	"	T. C. Jones.
10th	"	W. P. Noble.
11th	"	Ralph Leete.
12th	"	J. Sullivant.
13th	"	D. W. Caldwell.
14th	"	Thomas Mickey.

15th District	A. W. Glazier.
16th "	J. C. Jamison.
17th "	A. B. Cornell.
18th "	C. W. Horr.
19th "	E. F. Ensign.
20th "	W. S. Streator.

The new Board met at the College on June 19, 1877, and effected a permanent organization, by the election of the following officers and committees:

President—Warren P. Noble.

Secretary—Joseph Sullivant.

Treasurer—Henry S. Babbitt.

Executive Committee—T. C. Jones, A. C. Deuel, Herman Hoover, W. S. Streator, J. Sullivant.

Committee on Farm Management—E. F. Ensign, C. Kinsinger, J. C. Jamison.

At the same session of the Legislature there was passed an act to establish a department of Mining Engineering in the College.

An appropriation of $4,500 was made for the equipment of this department, but, at the same time, an amount of analytical work was required to be done by it without charge, that, if paid for at ordinary rates, would amount to much more than the interest on this sum: in other words, the State made its charity *pay*.

At a meeting of the Trustees, held on June 20, 1877, the following action was had:

Resolved, That the curriculum be changed, by striking therefrom the Department of Political Economy and Civil Polity, and substituting therefor the Department of Mines, Mine Engineering, and Metallurgy.

Resolved, That Henry Newton, A.M., M.E., be appointed Professor of Mines, Mine Engineering, and Metallurgy, in the Ohio Agricultural and Mechanical College, at the same salary as the other Professors.

Mr. Newton, having visited the College, accepted the position, expecting to commence his labors at the opening session in September, 1877.

In the meanwhile, under an appointment of the United States Government, he visited the Black Hills, to complete some geological investigations upon which he had been employed; but, unfortunately, he was almost immediately prostrated by mountain fever, and died after a brief illness.

The professorship was now offered to Wm. E. Guy, E.M., of St. Louis, a graduate of the Mining School of Freiburg, Saxony. He also visited the College, and left with the expectation of accepting the place, but on his return to St. Louis found it impracticable on account of business connections, which could not be at once dissolved.

The position was then tendered to and accepted by John A. Church, E.M., an experienced Metallurgist and Mining Engineer, who immediately proceeded to equip and put in order the department, and entered on his work of instruction in January, 1878.

Repeated efforts have been made by the College Faculty to bring the advantages of the institution to the farmers of Ohio. A special course of instruction was offered to young farmers on topics connected with their several interests during the first winter in which the College was opened. Renewed offers of the same kind have since been made with but little response from those to whom they were addressed, until in January of 1879 a class of nearly one hundred members was organized for a four weeks' course of lectures on the applications of science to agriculture. This course was attended with marked success. All members of the class expressed their interest in the scheme, and their approval of the manner in which it was carried out. This late attained success is believed to be largely due to the interest that the State Grange took in bringing its members to an understanding and appreciation of the opportunity. It seems to those who were concerned in this class, both in and out of the College, that its success makes a happy omen for the institution. The course is to be repeated and extended during the coming winter. It makes in reality a Farmers' Institute, offering all the advantages which such an organization can bring.

The matter of examination for entrance to the College is one that has been largely discussed and criticised. The standard that was fixed at the opening of the institution is still maintained. A temporary change was effected by the Board of Trustees of 1877, in opposition to the judgment of the Faculty; but the experience of one term was sufficient to show the disadvantages of the change, and, at the earnest request of the Faculty, the standard was restored. All that was ever asked was a good common school education, viz., a fair knowledge of English grammar, arithmetic, and the elements of geography, with the single addition of algebra through simple equations. This last element has been the subject of much complaint, which has been made, as is claimed, in the interest of the farmers of the State. It is freely conceded that a thorough knowledge of the first three branches would make a good foundation for the work which is here to be done; but, practically, it is the rarest thing to find a student well qualified in these branches who has not studied other subjects as well, and among these subjects the first to be taken up is algebra. By requiring this subject, we discourage the application for admission of a large number of untrained youths who require common school training, and only that—who are entirely unqualified for college work of any proper grade. The question at issue is simply this, shall the College be turned into a great common school, or shall it begin its work where the common schools leave off? If, in many districts of the State, the work of the common schools is not well enough done to qualify pupils for entrance to the College, the field for labor would seem to be in these backward schools. That no hardship is imposed by requiring the elements of algebra is seen from the statement, which can not be challenged, that there is not a township in Ohio in the common schools of which some teacher each year can not give instruction in algebra. The statement might be much stronger than this, for there is not a township in some counties, and scarcely a district in many townships, in which algebra is not actually taught at some time during the year. The term college, has a very indefinite meaning in Ohio, as most of the institutions of this name open their doors in preparatory departments to students of the lowest grade of acquirements, but the results obtained are not assuring. There is a difference between school and college. More liberty is granted to students in the latter than can be wisely used by pupils in the former. Let the farmers of the State make their neighborhood schools good, so that their children can be properly trained in the rudiments while still living under their own roofs. From such no complaints will come of the requirements for entrance here. The College has, in good faith, fixed its standard of admission so as to meet the *good* common schools of the State. It can not be fairly asked to take the pupils from every common school, unless it is proposed to do away with examinations altogether.

It is to be remembered, also, that its standard is assailed on another side. The high schools find fault with the low terms of admission adopted here, and urge that the College should begin its work nearer to the point where they themselves leave off. If this were practicable, there would certainly be some manifest advantages in it, for the presence of a comparatively well-trained body of students would be assured; but such a standard would be unjust to the agricultural communities, and can never be adopted here without breaking faith with the great interest to which the institution is, by its organic act, primarily devoted.

In May, 1878, a third organization of the Board of Trustees was effected by the legislation that follows. The name of the institution was also changed by this act:

AN ACT

To reorganize and change the name of the Ohio Agicultural and Mechanical College, and to repeal certain acts therein named.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the educational institution heretofore designated as the Ohio agricultural and mechanical college shall be known and designated hereafter as "The Ohio State University."

SEC. 2. The government of said university shall be vested in a board of seven trustees, who shall be appointed by the governor of the state, with the advice and consent of the senate; but no trustee, or his relation by blood or marriage, shall be eligible to any professorship or position in the university, the compensation for which is payable out of the state treasury, or said college fund.

SEC. 3. The members of said board of trustees, and their successors, shall hold their offices for the term of seven years each: provided, that the trustees first appointed under the provisions of this act shall hold their terms for one, two, three, four, five, six, and seven years, respectively, to be fixed by the governor in their commissions. In case a vacancy shall occur from death or other cause, the appointment shall be for the unexpired term. The trustees shall not receive any compensation for their services, but they shall be paid their reasonable and necessary expenses while engaged in the discharge of their official duties.

SEC. 4. The board of trustees shall have power, and it is made their duty, to collect, or cause to be collected, specimens of the various cereals, fruits, and other vegetable products, and to have experiments made in their reproduction upon the lands of the university, and to make report of the same, from year to year, together with such other facts as may tend to advance the interests of agriculture.

SEC. 5. The board of trustees shall have power, and it is hereby made their duty, to secure and keep in the said university a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the president of the university to collect and deposit in the said university, in such manner as shall be directed by the trustees, a full and complete set of specimens as collected by him and his assistants, together with a brief description of the character of the same, and where obtained; and the said specimens shall be properly classified and kept for the benefit of said university.

SEC. 6. The first meeting of the members of the board shall be called by the governor, as soon after the appointment of said board as convenient, to be held at said university, in Columbus, Ohio. All succeeding meetings shall be called in such a manner and at such times as the board may prescribe. The said board shall meet at least three times annually, and at such other times as they may think necessary for the best interest of the said university. A majority of the board of trustees present at any meeting shall constitute a quorum to do business; provided, a majority of all the board shall be required to elect or remove a president or professor.

SEC. 7. The board of trustees shall cause to be made, on or before the first day of January of each year a report to the governor of the condition of said university; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, officers, teachers, and other employés, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an estimate of the expenses for the ensuing year; a statement showing the progress of said university, recording any improvements and experiments made, with their costs, and the results, and such other matters as may be supposed useful. There shall be printed, under the provisions of section seven (7), of the act passed March 30, 1875, (O. L., volume 72, page 179), in pamphlet form, one thousand copies of said report for the general assembly, one thousand for the president and faculty of said college, and three thousand copies for distribution by the trustees in their several districts, in such manner as they shall deem best for the interests of said university. The president of said university shall transmit by mail one copy to the secretary of the interior, and one copy to each of the colleges which are or may be endowed under the provisions of the act of congress of July 2d, 1862.

SEC. 8. All funds derived from the sale of land scrip issued to the state of Ohio by the United States, in pursuance of the aforesaid act of congress, together with the interest accumulated thereon, shall constitute a part of the irreducible debt of the state, the interest upon which, as provided by the act of February 10, 1870 (O. L., volume 67, page 15), shall be paid to the university by the auditor of state, upon the requisition of the commissioners of the sinking fund, issued on the certificate of the secretary of the board of trustees, that the same has been appropriated by said trustees to the endowment, support and maintenance of the university, as provided in the act of congress aforesaid.

SEC. 9. That said board of trustees shall fix the compensation for the faculty, teachers, and all other employés of the university: provided, that the compensation for the services of the president of said university shall not exceed three thousand dollars, and that of the professors twenty-five hundred dollars per annum.

SEC. 10. It shall be the duty of the board of trustees, in connection with the faculty of the university, to provide for the teaching of such branches of learning as are related to agriculture and the mechanic arts, mines and mine engineering, and military tactics, and such other scientific and classic studies as the resources of the fund will permit; but no student will be required to study military tactics or take part in military drill, or provide any military or particular uniform, except those who elect to study military tactics.

SEC. 11. That the act passed April 20, 1877 (O. L., volume 74, page 100), entitled "an act to regulate the Ohio agricultural and mechanical college in Ohio, and to repeal certain acts therein named," and all parts of acts repealed by said act, are hereby repealed.

SEC. 12. This act shall take effect and be in force from and after its passage.

Passed May 1, 1878. [75 v. 126.]

Under this act Governor R. M. Bishop appointed the following Board of Trustees:

Hon. James B. Jamison	Cadiz, Harrison county, for one year.
S. H. Ellis	Springboro, Warren county, for two years.
Hon. Stephen Johnston	Piqua, Miami county, for three years.
Hon. T. J. Godfrey	Celina, Mercer county, for four years.
Alston Ellis	Hamilton, Butler county, for five years.
T. Ewing Miller	Columbus, Franklin county, for six years.
Hon J. H. Anderson	Columbus, Franklin county, for seven years.

At their meeting in May, 1878, the officers of the Board were chosen as follows:

T. J. Godfrey	*President.*
Joseph Sullivant	*Secretary.*
Dr. Henry S. Babbitt	*Treasurer.*

EXECUTIVE COMMITTEE.

J. H. Anderson, *Chairman*. T. Ewing Miller. Stephen Johnston.

In regard to the change of name effected by this legislation, it is to remarked that it was made without consultation with a single member of the Board of Trustees or of the Faculty. The President of the Faculty had called the attention of the Trustees and through them, of the legislature to the desirability of change of name in several of his annual reports for the following reasons, viz.: that the old designation was a misleading one to many, as experience had shown, that it was unfairly divided in practice, the first half becoming in reality the designation, and that it was unnecessarily cumbrous when used entire. It is safe to say that the particular name fixed upon would not have been selected by the Faculty, because it seems to them to cover more ground than at present belongs to the institution. It is proper to say, however, in emphatic terms that it is not because the institution is ashamed of its connection with agriculture and the mechanic arts that a change of its old designation was asked for. The present President of the State Board of Agriculture was a member of the Senate committee by whom this change of name was proposed. It is fair to suppose that if he had seen any express or implied affront to the great interest that he specially represents, he would have been quick to resent it. But the change was made without protest from him and, as is understood, with his hearty sanction. The courses of instruction have been changed since that date, only in the direction of rendering them more practical. The Ohio State University is somewhat more serviceable, by reason of increased facilities, to agriculture and the mechanic arts than the Ohio Agricultural and Mechanical College was.

Experimental work upon the college farm is being gradually developed. A tract of about ten acres is largely devoted to this purpose now, and every crop that is grown on the farm is made, if possible, to furnish some testimony on new or disputed points. It is to be remembered that experimental agriculture is in every way costly, and that the land grant income can not be legitimately used for such purposes. Provision for this line of work should be made in annual appropriation of moderate amount from the State treasury.

A beginning has been made in stocking the farm with good representatives of the several breeds of domestic animals—especially cattle and swine. The last legislature made a small appropriation for this purpose, and it is to this source that we must look for additional.

The agricultural department is gathering constantly the materials for illustration of this great subject. Veterinary science, in its elements at least, is made prominent, and specimens are being collected by which the teachings given are made effective and clear.

This is the only institution in the State in which a professorship of agriculture is established. The occupant of this chair in the University is very widely and favorably known to the farmers of Ohio, having served in various honorable capacities for forty years.

While the wide field of agriculture might seem entitled to more than one professorship in the University, it is to be remembered that several other departments are working as efficiently in supporting it as if they came under its special name—zoölogy, the study of animal life; botany, the study of plants; chemistry, the science that underlies almost all others; and physics, which treats of the general laws of matter, are all made tributary to the student of agriculture.

The farmers of Ohio will find here, if they choose to use them, opportunities for educating their children and themselves in the great applications of science to their own calling. What the institution can do for them has been implied rather than fully stated. But the half has not been told, even in the way of suggestions. It they would earnestly avail themselves of its advantages, and unitedly work to extend these advantages, the practice of this all important calling in the State would be revolutionized in a dozen years; wise husbandry would replace the exhausting and impoverishing system that now so largely prevails. The elements of wealth would be retained in or returned to the soil. Skillful care combined with adequate knowledge would escape the dreadful tax in the loss of domestic animals that ignorance and neglect now annually entail upon the State.

Attention has been called to what the University can do for one great interest of the body politic. It belongs to no one interest, but owes equal allegiance to all; but those who come first will be served first. If the farmers of the State could see the subject aright they would look to it that the department of agriculture never lacked for the presence of earnest and successful students. One such student in a community may do a great deal to awaken attention, and reform practice, and extend a rational system.

The expenses of education in the University are kept at the lowest point. Tuition is free, and board is brought down to most reasonable rates.

The equipment of the institution is superior in most branches of science to that of any other institution in the West. Not less than $30,000 has been spent in the outfit of laboratories and museums.

The system of instruction is eminently practical, the student learning, as far as possible, by being brought into direct and personal contact with the facts with which he deals.

Mechanic arts, which are made equally prominent in the organic act with agriculture, and which the well trained farmer needs to know in the elements at least, are now admirably provided for through the wise liberality of the last Legislature. About $10,000 were voted for building and equipping a mechanical laboratory. This building is now well under way, and the equipment will equal all the present necessities of the State in the elements of wood and iron work.

A list of the faculty and departments of the University, as at present constituted, is herewith appended:

FACULTY.

EDWARD ORTON, PH.D., M.D.,
Professor of General and Applied Chemistry.

JOSEPH MILLIKIN, A.M.,
Professor of English Language and Literature, and of the French and German Languages.

NORTON S. TOWNSHEND, M.D.,
Professor of Agriculture.

R. W. McFARLAND, A.M.,
Professor of Mathematics and Civil Engineering.

ALBERT H. TUTTLE, M.SC.,
Professor of Zoology and Comparative Anatomy.

LUIGI LOMIA, M.SC.,
First Lieut. Fifth Artillery, U. S. A.; Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.

S. W. ROBINSON, C. E.,
Professor of Physics and Mechanics.

JOSIAH R. SMITH, A.B.,
Assistant Professor of the Latin and Greek Languages.

NAT. W. LORD, M.E.,
Assistant Professor of Mining and Metallurgy.

JOHN T. SHORT, A.M.,
Assistant Professor of History and Philosophy.

THOMAS MATTHEW,
Instructor in Free-hand and Mechanical Drawing.

ALICE WILLIAMS,
Assistant in Department of Modern Languages.

BRIEF HISTORY OF AGRICULTURE.

IMPORTANT TO ALL COUNTRIES, ESPECIALLY THE UNITED STATES.

[From speech of Hon. H. G. Davis, in the Senate of the United States, Jan. 14, 1879.]

The Senate having under consideration concurrent resolution in relation to the advancement of agricultural interests, Mr. Davis, Senator from West Virginia, said:

Mr. President: I move to take up the concurrent resolution offered by me early in December, in relation to the advancement of agricultural interests.

The motion was agreed to; and the Senate proceeded to consider the following resolution submitted by Mr. Davis, of West Virginia, December 4, 1878:

> WHEREAS, Agriculture is the foundation of nearly all our wealth, and it is mainly through the exportation of its products that we are paying off our large indebtedness, foreign and domestic, and have the present large balance of trade in our favor; and
>
> WHEREAS, although about one-half of the people of this country are engaged in agricultural pursuits, and all other interests are dependent upon this, our leading and most important interest, commercial and otherwise, yet but little has been done by the General Government to promote agriculture, while other less general and important interests have been largely aided; therefore,
>
> *Resolved by the Senate* (*the House of Representatives concurring*), That the committees on agriculture of the respective houses be, and they are hereby, instructed to consider generally the subject of agriculture, and report, by bill or otherwise, what can or ought to be done by the General Government to better advance, encourage, and foster agricultural interests, and that said committees shall have the power to send for persons and papers.

Mr. Davis, of West Virginia: Mr. President, in inviting the attention of the Senate to this resolution, and asking its passage, I feel that there is no subject of more importance and more moment to the country, none around which so many interests cluster and in which so many center, as American agriculture.

It is a subject so broad, *so national, so universal, so non-partisan, so non-sectional,* so *far-reaching* in its *effects* and *important* in its *results*, that it should at once command the patient attention of all, and in its consideration party feeling and party passion should have no voice.

The country has been and is weighed down with a heavy national, State, municipal, and individual debt, held at home and abroad, the interest and principal of which must be paid; business has been, and is, depressed; commerce languishes; confidence is destroyed; almost numberless remedies and suggestions have been proposed to bring relief and restore prosperity, but in the prolonged stagnation, most all have failed and are distrusted.

This resolution is not brought forward as a panacea for all our ills and the only safe road out of our troubles, but it is claimed that for what has been done in the past to bring relief, and for whatever of light and hope there is ahead of us, the country is mainly indebted to agriculture; and if anything can be done to stimulate and better promote this great national interest, the greatest of all, it will not only continue largely to aid in bringing relief and restoring prosperity, but remain a lasting and substantial benefit to the country in the future.

IMPORTANCE OF AGRICULTURE.

It is impossible to measure, or even estimate, the importance of agriculture to a people. It is the foundation upon which civilization and society rest; the basis and source of the permanent wealth of a nation. No people in history have made substantial progress in civilization, the arts and sciences, and have remained long prosperous, if they neglected agriculture. It is the most universal of all arts, the parent of manufactures and commerce, and the basis of all other industries, and without which all others must decay and perish.

In all countries, its rudest beginnings have marked the first steps in the emancipation of the people from barbarism and their approach to civilization and organized society. This fact is fully established by annually appropriating and expending large sums and sending agents to induce the savage Indian to adopt farming instead of hunting for a living, and when successful much has been accomplished, and the Indian is on the high road to become a good and useful citizen.

Adam was the first agriculturist. We read in Genesis:

> "And the Lord God took the man and put him into the garden of Eden to dress it and to keep it."

In the earliest times the Egyptians were devoted to agricultural pursuits, and Egyptian civilization only took form and shape after her people learned to till the soil.

The Israelites were one of the greatest agricultural nations of antiquity: nearly the whole people were engaged in agriculture; it constituted the chief source of their wealth. Nearly every Israelite was a landowner, and literally sat "under his own vine and fig tree." Noah was a husbandman. Abraham had flocks. Job, in addition to owning large herds and flocks, had five hundred yoke of oxen, with which he plowed. Isaac was a farmer, and Jacob tended flocks and herds. David was a farmer and also a shepherd.

The Greeks, though possessing a sterile soil, gave great attention to agriculture.

ROME AND AGRICULTURE.

In the early history of Rome the people were thoroughly devoted to agriculture, and were proud of it; it was their chief source of wealth. They were a nation of farmers, and it was during the period they paid the most attention to agriculture that they enjoyed the most substantial progress, prosperity, and success. The state allotted to each citizen a certain parcel of land, and he who was not content to own and till the land was deemed dangerous to the state and to society. One could not hold office unless he was a landowner and a cultivator of the soil; and it is a remarkable fact that the decline of agriculture, more than anything else, marks the decay and dissolution of the Roman Empire. When her people neglected tilling the soil and tending their herds, and depended upon the neighboring provinces for supplies and food, her glory began to depart.

Cato, distinguished as a general, statesman, and orator, found time to write books upon farming. Cicero, the renowned and eloquent orator, prided himself upon his agricultural attainments. The agricultural literature of Rome was unsurpassed in its time, and is only inferior to that of a few nations to-day.

Cincinnatus was a farmer, and after having been chief ruler of his country and one of its great generals, returned to his plow. He was called from thence to save his country a second time, and, having accomplished his high purpose, he returned to it again.

In Spain, under the Saracens, followed by the Moors, agriculture reached a high state of perfection, which has not been surpassed in more modern times. The revenue from it alone amounted to $30,000,000 per annum more than the combined revenue of all the other monarchs of Europe at that time. During the dark ages, when the Goths, Vandals, and other barbarian conquerors overran nearly all Europe, agriculture was not only neglected and abandoned, but it sunk into the lowest condition of contempt. It seemed as if civilization had taken its flight and barbarism was about to claim the world.

WHAT AGRICULTURE HAS ACCOMPLISHED.

About the fourteenth century agriculture revived and the improvement and elevation of the lower and middle classes began, and, with its advance, has gradually gone on all over the world.

Agriculture started England on her high road to prosperity and the commercial supremacy which she has maintained in the world for five hundred years.

Through agriculture a large part of Holland was reclaimed from the sea, and it is now the foundation of her great wealth and prosperity.

The people comprising the great German Empire, one of the most powerful of nations, and respected all over the world, are largely devoted to agriculture and are greatly indebted to it for their wealth and power.

It has been the glory of France and the chief occupation of her people for centuries, and through it, though but a few years ago a conquered people and compelled to pay a war indemnity whose figures are staggering, but which was paid in less time than any other nation ever paid so large an amount, to-day her people are proud, rich, and prosperous.

It is agriculture that gives greatness to Russia, and enables her to contend for supremacy in European affairs and carry on her great wars.

Belgium and Switzerland, though small, owe their prosperity and importance largely to agriculture.

Indeed, all history attests the fact that where a people have devoted themselves to agriculture they have been uniformly prosperous and progressive, while those nations and the people who have abandoned or even neglected it, have declined.

The majority of all people, in all times and ages of the world, from the humblest to the highest, have engaged in agriculture. Presidents, emperors, kings, and nobles have not thought it a condescension to be farmers, but rather an honor and a credit. The greatest names in our history have been those who were practical farmers and devoted to agriculture. We have been from the beginning, and must remain, a nation of farmers.

WHAT WE OWE TO AMERICAN FARMERS.

From the time of the landing at Jamestown and Plymouth Rock, the American farmers have always constituted the advance guard and the largest part of that grand army of progress and liberty which in its triumphant march in the face of dangers, trials, privations, and the cruelty of the savage, has gradually subdued forests, crossed rivers, and climbed mountains, until civilization, society, churches, schools, and happy homes have been established from ocean to ocean and from the lakes to the Gulf.

The American farmers have laid the foundation of an empire on this continent, destined, largely through their efforts, virtues, industry, courage, and devotion to free government, to surpass in substantial glory, grandeur, wealth, progress, and prosperity all the nations of this world and the achievements of all history.

Our liberties were conquered and our Constitution made mainly by farmers, and to them in any and every great crisis we must look for the safe-keeping and protection of both.

As a rule the agricultural classes have always been devoted to liberty, peace, and good order, and the friends of established society and the enemies of disorder, wrong, change, violence, and unjust revolution; they constitute the reserve forces of conservatism in all governments, particularly in ours.

The collection of large populations in commercial centers, by depleting the country, has a dangerous tendency. It is in the cities and these great centers that rings, strikes, frauds, trades unions, centralization, and consolidation are born, fostered, and best flourish, while in the agricultural districts the tendency is in the opposite direction.

EMINENT MEN AND AGRICULTURE.

Washington, called from his farm to command the armies of the Revolution, having gained our liberties and started our Government in its grand experiment, against the unanimous entreaties of his countrymen to remain in public life, returned to his farm at Mount Vernon and superintended it until the close of his exemplary and patriotic life, nearly the last act of which was to ride over and inspect his various fields, and give orders concerning the same.

In a letter to Sir John Sinclair, Washington said:

> "I know of no pursuit in which more real and important service can be rendered to any country than by improving its agriculture and its breed of useful animals."

And in his message to Congress he more than once called attention to the great importance of agriculture.

General Jackson, in his fourth annual message to Congress (December, 1832), in speaking of agriculture, says:

> "The wealth and strength of a country are its population, and the best part of that population are the cultivators of the soil. Independent farmers are everywhere the basis of society and the true friends of liberty."

Another great mind has said:

> "A virtuous and intelligent farmer has attained the highest estate of fallen man."

Mr. Jefferson, when not attending to his public duties, spent most of his time upon his estate at Monticello. He said that agriculture was the highest calling of man, the surest road and safeguard to a nation's prosperity and liberty.

Mr. Webster, perhaps the greatest constitutional lawyer this country ever produced, was fond of agricultural pursuits, and spent all of his leisure time at Marshfield, where his great mind found ample scope and occupation in attending to his farm and stock.

Mr. Clay, that great patriot of the West, who knew no North, South, East, or West, spent much of his time at Ashland, and while there devoted his great talent to farming; and when permitted to retire from public life he returned to his farm.

That able, pure, and great man, Silas Wright, when he retired from public life, went direct to his farm, and gave his personal attention to its management; and the last work of his pen was to write an agricultural address, which he did not live to deliver. It is a proud distinction to agriculture in our country that it numbers among its advocates and followers such names as Washington, Jefferson, Adams, Madison, Jackson, Webster, Clay, and Wright.

Napoleon the First said that agriculture was the body and soul of the empire; and, in the height of his glory, he gave the subject much attention and encouragement, and established in France a department of agriculture.

Dr. Johnson remarks that agriculture not only gives riches to a nation, but the only riches she can call her own.

Prince Albert, a model farmer, said that agriculture was the foundation of the social state.

Gibbon says that agriculture is the foundation of manufactures, since the productions of nature are the materials of art.

THE UNITED STATES AND AGRICULTURE.

The following table presents the number of persons engaged in the different occupations in the United States at the last enumerations:

Population.	1870 (census).		1878.	
	Number.	Per cent.	Number.	Per cent.
Total over ten years	28,228,945	....	34,000,000	....
Males in all occupations	12,505,923	....	15,000,000	....
Agriculture	5,922,471	47.35	7,600,000	50.66
Manufacturing and mining	2,707,421	21.65	2,900,000	19.33
Professional and personal	2,684,793	21.47	3,000,000	20.00
Trade, commerce, and transportation	1,191,238	9.52	1,500,000	10.00

The census of 1870 gives an aggregate value of all personal and real property for that year of $29,822,535,140.

The agricultural interest being valued at 38 per cent. of all others combined, the value of farms and property is $11,124,959,037.

Value of farms in 1870	$9,262,803,861
Value of farm animals in 1870	1,525,276,747
Value of farm implements in 1870	336,879,429
Total	$11,124,959,037

In the United States about half, or twenty-three millions, of the people are engaged in agriculture. It is the fundamental business of the country, the leading commercial interest, and the most important home industry. We are a nation of farmers, and because of the vast area of our soil and its great fertility, we must remain so. Our agricultural products not only support our people, but pay for what we buy abroad; they furnish our greatest source of revenue, and to them we are indebted for the balance of trade now being largely in our favor, and that our bonds and other indebtedness held abroad are so rapidly coming home. Ordinarily, upon the results of our crops hinge our prosperity for a given year or period. If the crops are good, business is good; if short, business is dull.

The crops exert a controlling influence upon the moneyed operations of the people, at home and abroad. The bankers, manufacturers, and merchants—in fact, all classes of business men—watch, if possible, with more interest and concern the growth and gathering of the crops than the farmer who sows and reaps them. Mr. Jefferson declared that one-half of our old war debt was paid through the products of agriculture, and it is through them mainly that our new war and other debts have been and must be paid. If the farmers, for a given year, should only raise enough for their own support, the consequences to the other classes would be almost ruinous; and if the crops should absolutely fail for a year, the ruin and the starvation that would follow would be beyond description.

We have rich gold and silver mines, inexhaustible iron, coal, copper, and lead mines, great salt and petroleum wells, large forests of timber; but none of these, nor all combined, are equal to agriculture. Not only are the people of the United States interested in American agriculture, and dependent upon it for support, for revenue, and for prosperity, but the whole world, because America is the granary of the world.

In the United States, a more general and better interest is being awakened in agriculture; its importance is fast becoming better understood and appreciated; the people are beginning to learn and understand that mainly to agriculture, now and in the great future, we must look for our prosperity as a nation. It is not so much discredited and abandoned for the overcrowded professions and cities, for mercantile pursuits, and for clerkships, now as in times past.

The following figures, taken from official sources, will serve to show what agriculture has done, and is doing, for the country. An official statement of the Treasury Department, dated January 1, 1879, shows that—

The imports for the twelve months ending November 30, 1877, were..	$482,292,984
And for the twelve months ending November 30, 1878, were.......	430,661,998
Decrease of imports..	$51,630,986
The exports for the twelve months ending November 30, 1878, were..	$739,971,739
And for the twelve months ending November 30, 1877, were.......	623,016,613
Increase of exports..	$116,955,126
The exports for the twelve months ending November 30, 1878	739,971,739
The imports for the same period..............................	430,661,998
Exports over imports...	309,309,741

This is a good showing in round numbers during 1878. We bought $5,000,000 less and sold $116,000,000 more than we did in 1877, and we sold $309,000,000 more than we bought. This is principally owing to agriculture.

The following table, taken from the official report of the Bureau of Statistics, dated September, 1878, speaks well for agriculture:

Statement showing the value and per centage of agricultural products (including products of the forest) exported from the United States for each year from 1850 *to* 1878.

Year ending June 30—	Total domestic exports.	Total exports of agricultural products.	Percentage of agricultural products to total domestic exports.
1850	$136,946,912	$123,825,808	90.44
1851	196,689,718	165,828,736	85.69
1852	192,368,984	144,037,465	74.85
1853	213,417,697	176,589,418	82.74
1854	252,047,806	195,258,953	77.48
1855	246,708,553	175,385,328	71.09
1856	310,586,330	248,091,084	79.91
1857	338,985,065	260,139,925	76.75
1858	293,758,279	232,478,953	79.49
1859	335,894,383	258,449,990	76.96
1860	373,189,274	295,081,484	78.61
1861	228,699,486	180,516,442	82.46
1862	213,069,519	160,821,597	75.50

Statement showing the value and percentage of agricultural products—Continued.

Year ending June 30—	Total domestic exports.	Total exports of agricultural products.	Percentage of agricultural products to total domestic exports.
1863	$305,884,998	$215,273,568	70.36
1864	320,035,199	183,356,276	57.29
1865	323,743,187	207,232,749	64.01
1866	550,684,277	416,157,242	75.58
1867	438,577,312	330,413,246	75.35
1868	454,301,713	319,004,531	70.22
1869	413,961,115	311,756,665	75.32
1870	499,092,143	391,269,605	79.01
1871	562,518,651	397,963,220	70.75
1872	548,219,718	407,141,706	74.13
1873	649,132,563	493,962,697	76.00
1874	693,039,054	550,043,638	79.37
1875	643,094,767	479,893,212	74.63
1876	644,956,406	514,339,866	81.30
1877	676,115,592	517,737,998	76.58
1878	722,811,815	592,475,813	81.98

This statement shows that in 1878 our agricultural products, including forest, were about 82 per cent., and since 1850 they have averaged about 74 per cent. of our total exports.

The annual production and value of cereals for the ten years ending 1877 are given in the following table from official sources:

THE CEREAL CROPS OF THE UNITED STATES.

Statement showing the annual production, acreage, total value, value per bushel, yield per acre, and value per acre of the cereal crops of the United States, from 1868 to 1877, inclusive.

CORN.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bush.*	
1868	906,527,000	34,887,246	$569,512,460	62.8	25.9	$16 32
1869	847,320,000	37,103,245	658,532,700	75.3	23.5	17 74
1870	1,094,255,000	38,646,977	601,839,030	54.9	28.3	15 57
1871	991,898,000	34,091,137	478,275,900	48.2	20.1	14 02
1872	1,092,719 000	35,526,836	435,149,290	39.8	30.7	12.24
1873	932,274,000	39,197,148	447,183,020	48.0	23.8	11 41
1874	850,148,500	41,036,918	550,043,080	64.7	20.7	13 40
1875	1,321,069,000	44,841,371	555,445,930	42.0	29.4	12 38
1876	1,283,827,000	49,033,364	475,491,210	37.0	26.1	9 69
1877	1,342,558,000	50,369,113	480,643,400	35.8	26.6	9 54
Totals	10,689,595,500	404,733,355	$5,252,116,020	....	....	....
Averages	1,068,959,550	40,473,335	$525,211,602	49.1	26.4	$12 97

WHEAT.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bush.*	
1868............	224,036,600	18,460,132	$319,195,290	142 4	12 4	$17 29
1869............	260,146,900	19,181,004	244,924,120	94 1	13.5	12 76
1870............	235,884,700	18,992,591	245,805,045	104 2	12.4	12 94
1871............	230,722,400	19,943,893	290,411,820	125.8	11.5	14 56
1872............	249,997,100	20,858,359	310,180,375	124 0	11.9	14 87
1873............	281,254,700	22,171,676	323,594,805	115.0	12.7	14 59
1874............	308,102,700	24,967,027	591,107,895	94.4	12.3	11 66
1875............	292,136,000	26,381,512	294,580,990	100.0	11.0	11 16
1876............	289,356,500	27,627,021	300,259,300	103.7	10 4	10 86
1877............	364,194,146	26,277,546	394,695,779	108.2	13.9	15.68
Totals	2,735,831,746	224,860,768	$3,014,815,419	....	....	....
Averages ...	273,583,174	22,486,076	$301,481,541	110.2	12.12	$13 40

RYE.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bush.*	
1868............	22,504,800	1,651,321	28,683,677	127.4	13.6	$17 37
1869............	22,527,900	1,657,584	21,877,294	97.1	13.5	13 19
1870............	15,473,600	1,176,137	12,612,605	81.5	13.1	11 72
1871............	15,365,500	1,069,531	12,145,646	79.0	14.3	10 35
1872............	14,888,600	1,048,654	11,363,693	76.3	14.1	10 83
1873............	15,142,000	1,150,355	11,548,126	76.2	13.1	10 04
1874............	14,990,900	1,116,716	12,870,411	85.8	13 4	11 52
1875............	17,722,100	1,359,788	13,631,900	76.9	13.0	10 02
1876............	20,374,800	1,468,374	13,635,826	66.9	13.8	9 28
1877............	21,170,100	1,412,902	12,542,895	59.2	14.9	8 87
Totals	180,160,300	13,111,362	$150,912,073	....	....	....
Averages ...	18,016,030	1,111,130	$15,091,207	83.7	13.7	$11 51

OATS.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bushels.*	
1868	254,960,800	9,665,736	$142,484,910	55.9	26 3	$14 74
1869	288,334,000	9,461,441	137,347,900	47.6	30.4	14 51
1870	247,277,400	8,702,395	107,136,710	43 3	21.1	12 18
1871	255,743,000	8,365,809	102,570,930	40.1	30.5	12 26
1872	271,747,000	9,000,769	91,315,710	33 6	30.1	10 14
1873	270,340,000	9,751,700	101,175,750	37.4	27.7	10 37
1874	240,369,000	10,897,412	125,047,530	52.0	22.0	11 47
1875	354,317,500	11,915,075	129,499,930	36.5	29.7	10 86
1876	320,884,000	13,358,908	112,865,900	35.1	24 0	8 44
1877	406,394,000	12,826,148	118,661,550	29.2	31 6	9 25
Total	2,910,366,700	104,035,393	$1,168,105,920	....	....	....
Average	291,036,670	10,403,539	$116,810,592	40.1	28.0	$11 22

BARLEY.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bushels.*	
1868	22,896,100	937,498	$29,809,931	130.2	24 4	$31 79
1869	28,652,200	1,025,795	23,357,909	81.6	27 9	22 79
1870	26,295,400	1,108,924	22,244 584	84 5	23.7	20 65
1871	16,818,500	1,177,666	21,541,777	80 6	22.6	18 29
1872	26,846,400	1,397,082	19,837,773	73.8	19.2	14 19
1873	32,044,490	1,387,106	29,333,529	91.5	23 1	21 15
1874	32,552,500	1,580,626	29,983,769	92.1	20 6	18 96
1875	39,908,600	1,789,902	29,952,082	81 1	20.6	16 73
1876	38,710,500	1,766,511	25,735,110	66.4	21 9	14 56
1877	34,441,400	1,614,654	22,028,044	63.9	21.3	13 64
Total	306,066,091	13,785,764	$253,854,503	....	....	....
Average	30,606,609	1,378,576	$25,385,450	82.9	22.2	$18 41

BUCKWHEAT.

Year.	Total production.	Total area.	Total value of crop.	Value per acre.	Av'ge per acre.	Av'ge value per acre.
	Bushels.	*Acres.*		*Cents.*	*Bushels.*	
1868	19,863,700	1,113,993	$20,814,315	104.8	17.8	$18 68
1869	17,431,100	1,028,693	15,814,265	90.7	16.9	15 37
1870	9,841,500	536,992	7,725,044	78.4	18.3	14 38
1871	8,328,700	413,915	6,900,268	82.8	20.1	16 67
1872	8,133,500	448,497	6,747,618	82.9	18.1	15 04
1873	7,837,700	454,152	6,382,043	81.4	17.2	14 05
1874	8,016,600	452,590	6,477,885	80.8	17.7	14 31
1875	10,082,100	575,530	7,166,267	71.0	17.5	12 45
1876	9,668,800	666,441	7,021,498	72.6	14.5	10 53
1877	10,177,000	649,923	6,998,810	68.7	15.6	10 76
Totals	109,380,700	6,340,726	$92,048,013	....	....	....
Average	10,938,070	634,072	$9,204,801	84.1	17.2	$14 15

Total cereal products of the United States.

Year.	Total production.	Total area.	Total value of crop.
	Bushels.	*Acres.*	
1868	1,450,789,000	66,715,926	$1,110,500,583
1869	1,491,412,100	69,457,762	1,101,884,188
1870	1,629,027,600	69,251,016	997,423,018
1871	1,528,776,100	65,061,951	911,845,441
1872	1,664,331,600	68,280,197	874,594,459
1873	1,538,892,891	74,112,137	919,217,273
1874	1,454,180,200	80,051,289	1,015,530,570
1875	2,032,235,300	86.863,178	1,030,277,099
1876	1,962,821,600	93,920,619	935,008,844
1877	2,178,934,646	93,150,288	1,035,570,478
Totals	16,931,401,037	766,867,363	$9,931,851,953
Average	1,693,140,103	76,686,736	$993,185,195

This table shows the average bushels and value per annum for ten years, 1868 to 1878, as follows:

Products.	Bushels.	Value.
Corn	1,068,959,550	$525,211,602
Wheat	273,583,174	301,481,541
Rye	18,016,030	15,091,207
Oats	291,036,670	116,810,592
Barley	30,606,609	25,385,450
Buckwheat	10,938,070	9,204,801

These figures are of great importance and value, and show the enormous amount in bushels and dollars of one branch of agriculture.

The following official statement, dated November 14, 1878, shows the amount of our exports exclusively agricultural, from 1875 to 1878:

Statement showing the currency value of the agricultural products herein mentioned, exported from the United States during the years ending June 30, 1875, to 1878, inclusive.

Products.	1875.	1876.	1877.	1878.
Animals, living:				
Hogs	$739,215	$670,042	$699,180	$267,259
Horned cattle	1,103,085	1,110,703	1,593,080	3,896,818
Horses	242,031	246,964	301,134	798,723
Mules	356,828	224,860	478,434	501,513
Sheep	183,898	171,101	234,480	333,499
All other, and fowls	47,448	24,617	18,895	46,841
Total animals living	2,672,505	2,436,287	3,325,203	5,844,653
Animal oils:				
Lard oil	147,384	149,156	281,551	994,440
Neatsfoot and other animal oils	12,515	24,498	19,720	17,447
Total animal oils	159,899	173,654	301,271	1,011,887
Provisions:				
Bacon and hams	28,612,613	39,664,456	49,512,412	51,752,068
Beef, fresh	....	....	4,552,523	5,009,856
Beef, salted or cured	4,197,956	3,186,304	2,950,952	2,973,234
Butter	1,506,996	1,109,496	4,424,616	3,931,822
Cheese	13,659,603	12,270,083	12,700,627	14,103,529
Condensed milk	123,565	118,549	123,801	128,284
Eggs	8,743	8,300	8,429	14,880
Lard	22,900,522	22,429,485	25,562,665	30,014,254
Meats, preserved	735,112	998,052	3,939,977	5,102,625
Mutton, fresh	....	....	36,480	9,272
Pork	5,671,495	5,744,022	6,296,414	4,913,657
Total provisions	77,416,605	85,528,747	110,108,896	117,953,481

Statement showing currency value of agricultural products herein mentioned, etc.—Continued.

Products.	1875.	1876.	1877.	1878.
Hides and skins, other than fur	$4,729,725	$2,905,921	$2,480,427	$1,286,840
Tallow	5,692,203	6,734,378	7,883,616	6,695,377
Bones and bone-dust	132,216	69,159	121,493	78,989
Hair	429,598	310,761	338,487	361,348
Total animals and their products	10,983,772	10,020,219	10,824,023	8,422,554
Bread and breadstuffs:				
Barley	61,408	210,586	708,541	2,565,736
Bread and biscuit	610,092	632,580	626,034	730,317
Indian corn	24,456,937	33,265,280	41,621,245	48,030,358
Indian corn meal	1,290,533	1,305,027	1,511,152	1,336,187
Oats	290,537	588,583	1,150,686	1,277,920
Rye	204,590	480,083	1,822,966	3,051,739
Rye flour	54,964	39,054	39,672	30,775
Wheat	59,607,863	68,382,899	47,135,562	96,872,016
Wheat flour	23,712,440	24,433,470	21,663,947	25,095,721
Other small grain and pulse	804,193	1,136,515	876,665	1,077,433
Maizena, farina, and all other preparations of breadstuffs used for food	364,708	707,478	650,206	1,709,639
Total bread and breadstuffs	111,458,265	131,181,555	117,806,676	181,777,841
Fruits:				
Apples, dried	326,193	67,915	920,292	260,085
Apples, green or ripe	722,247	221,764	986,112	386,261
Other fruit, green, ripe, or dried	269,632	210,177	268,282	296,310
Preserved in cans or otherwise	315,931	327,432	762,344	435,450
Total fruits	1,634,003	827,278	2,937,030	1,378,106
Seeds:				
Cotton	63,128	69,605	130,062	179,602
Flaxseed or linseed	137	257	8	437
Clover, timothy, garden, and all other	1,227,750	1,348,750	3,403,685	2,085,887
Total seeds	1,291,015	1,418,612	3,533,755	2,265,926
Textiles:				
Cotton, raw	190,638,625	192,659,262	171,118,508	180,031,484
Wool, raw	62,754	13,845	26,446	93,358
Hemp, raw	21,856	8,318	12,182	18,210
Total textiles	190,723,235	192,681,425	171,157,136	180,143,052
Vegetable oil and oil-cake:				
Cotton-seed	216,640	146,135	842,248	2,514,320
Linseed	30,689	23,770	43,435	27,232
Oil-cake	5,138,300	5,774,585	4,818,145	5,095,163
Total vegetable oils and oil-cake	5,385,629	5,944,490	5,703,828	7,636,715
Miscellaneous:				
Ginseng	658,926	646,974	562,268	497,247
Hay	110,225	134,017	116,936	141,340
Hops	1,286,501	1,384,521	2,305,355	2,152,873
Rice	19,831	30,918	78,112	33,953

Statement showing currency value of agricultural products herein mentioned, etc.—Continued.

Products.	1875.	1876.	1877.	1878.
Miscellaneous—continued:				
Tobacco-leaf	$25,241,549	$22,737,383	$28,825,521	$24,803,165
Potatoes	522,182	431,443	533,187	541,593
Onions	51,259	54,015	45,081	44,522
Other vegetables, raw, prepared, and preserved	169,325	133,272	116,518	138,509
All other agricultural products unenumerated	791,197	665,202	1,154,437	1,251,534
Total value of miscellaneous	28,850,995	26,217,728	33,740,415	29,004,736
Total value of agricultural products included in this schedule	430,575,923	456,429,995	459,439,233	536,038,951
Total value of exports of domestic merchandise	559,237,638	594,917,715	632,980,854	695,749,930
Per cent. of agricultural products to total domestic exports.	77.00	76.72	72.59	77.05

For the year 1878 our exports from agriculture alone reached the enormous sum of	$536,038,951
While our entire exports from all other sources, including agriculture, for 1878, amount to	695,749,930
Total exports, less agriculture	$159,710,979

This shows that agriculture furnished full three-fourths of our entire exports, and amounted to more in dollars than our imports.

These statements establish the fact that, as in the past, we have mainly depended upon agriculture, so, in the future, we must look to it for our support and ability to pay for what we purchase abroad, as also the payment of our foreign debt and interest.

COTTON.

The soil of some of our States is so well adapted to the growing of cotton that we are the chief producer of the world, and must remain so. It constitutes the largest factor in our exports, bringing us since 1865 an average of more than $200,000,000 per annum, or more than two and a half billions for the thirteen years—which is more than our national debt. Without cotton our foreign trade would have been largely against us. There are good reasons to believe the production will increase from year to year. This large amount is part of the aid and contribution the Southern States bring to us in restoring prosperity to the whole country.

BREADSTUFFS, INCLUDING ALL CEREALS,

Constitute the next largest item in our exports, yielding last year $181,777,841, and an average since 1865 of near $100,000,000 per annum.

ANIMAL PRODUCTS, INCLUDING CATTLE AND HOGS,

Rank next in exports, and amounted last year to $133,232,575, an average for the last decade of about $80,000,000 per annum. For this and breadstuffs we are chiefly indebted to the West.

BUTTER AND CHEESE.

This is an important farming and agricultural interest which has not hitherto attracted the attention it deserves, and one that is fast growing in our country. It is estimated that last year the total production of cheese was 350,000,000 pounds, and of butter 1,500,000,000 pounds; estimated value of both being about $350,000,000. This is the contribution of the whole country, and is the leading agricultural interest next to corn, being only one-fourth less in value, one-third more than cotton and one-seventh more than the hay crop. The exports for 1878 were: cheese, $14,103,529; butter, $3,931,822.

The number of cows in the United States is estimated at about 12,500,000—over six times the number in Great Britain, and twice the number in France.

VALUE OF FARM PRODUCTS AND EXPORTS.

The following statements, also from official sources, show the value of farm products, and exports of the same, as also estimated value of farm animals, and increase in the exports of some of the leading products, for 1876 and 1877:

Value of farm products and exports of the same, and ratio of exports to total production, for 1876 and 1877.

1876.

Products.	Total values.	Value of exports to June 30, 1877.	Percentage exported.
Indian corn	$475,491,000	$43,000,000	9.0
Wheat	300,259,000	69,000,000	22.9
Rye	13,636,000	1,850,000	13.6
Oats	112,866,000	1,230,000	1.1
Barley	25,735,000	708,000	2.7
Cotton	229,445,000	171,000,000	74.5
Totals	$1,157,432,000	$286,788,000	24.8
Potatoes	83,861,000		
Hay	300,901,000		
Grand total	$1,542,194,000		

1877.

Products.	Total values.	Value of exports to June 30, 1878.	Percentage exported.
Indian corn	$480,643,000	$49,365,000	10.3
Wheat	394,696,000	122,000,000	30.9
Rye	12,543,000	3,082,000	24.6
Oats	118,662,000	1,278,000	1.1
Barley	22,029,000	2,566,000	11.6
Cotton	215,000,000	180,000,000	83.7
Totals	$1,243,573,000	$358,291,000	28.8
Potatoes	76,249,000		
Hay	271,935,000		
Grand total	$1,591,757,000		

Estimated values of farm animals.

Classes of stock.	1876.	1877.
Horses	$610,000,000	$600,000,000
Cattle	615,000,000	628,000,000
Sheep	81,000,000	80,600,000
Hogs	171,000,000	160,839,000
Totals	$1,477,000,000	$1,469,439,000

Value of agricultural exports.

Products.	1876.	1877.
Animals and animal products	$113,941,509	$140,564,066
Breadstuffs	131,212,471	118,126,940
Cotton	200,382,240	183,253,248
Wood	21,620,486	23,422,966
Miscellaneous	46,079,567	58,652,719
Totals	$513,236,273	$524,019,939

The following table gives some of the principal items, showing the increase of exports of 1878 over the year 1877:

Increase in horned cattle	$2,303,708
Increase in barley	1,857,000
Increase in corn	6,409,000
Increase in wheat and flour	53,164,000
Increase in cotton	8,381,000
Increase in bacon	2,237,000
Increase in cheese	1,402,000
Increase in lard	4,451,000
Increase in preserved meats	1,160,000

These tables speak volumes for agriculture, and show a great increase in the last few years.

POPULATION.

France, with an area of 201,000 square miles, has a population of about 36,000,000, or 182 persons to the square mile. At the last census Texas, with an area of 274,000 square miles, had a population of less than 1,000,000, or about 4 people to the square mile, while her soil and climate is equal, if not better, than that of France or any other country.

Belgium, with an area of 11,373 square miles, has a population of 5,336,634, or about 469 people to the square mile, while we have a dozen States with a larger area, equally fertile soil, and better climate, with less than 20 people to the square mile.

Germany, with an area of 212,091 square miles, has a population of 42,727,360, or about 200 persons to the square mile.

Great Britain and islands, with a population of 31,628,338, has an area of 121,230 square miles, or about 268 persons to the square mile.

The United States, with an area of 3,603,884 square miles, has a population of about 45,000,000, or 13 persons to the square mile, and if we take the States only, and exclude the Territories, the population is 22 persons to the square mile.

We have more than 2,000,000,000 acres of land, with a soil and climate unsurpassed, and adapted to the production of almost everything necessary to the wants and comfort of mankind, three-fourths of which can be used for agricultural purposes, and much of it—indeed more than one-half—can be purchased for less than the rental value per acre for a single year of the agricultural lands of England, France, Germany, and Belgium.

These figures show that we have ample territory, with agricultural facilities to support a population of *many hundred millions*, and then not be so densely populated as the countries above named.

In substantial prosperity and progress, in all that makes a nation great, we must soon take the lead of all other countries; and New York, supported by our vast agricultural, manufacturing, and commercial resources, at no distant day ought to and will be the financial and commercial center of the world, as London is to day.

This prospect should stimulate the encouragement of agriculture and commerce, which must contribute so largely to this result. It must, however, be admitted that, instead of doing so, the tendency and effect of our national legislation has been to encourage other industries and the building up of towns and cities at the expense of the soil, the mine, and commerce.

Several of the countries of Europe are now overcrowded with people, and it is a question whether or not they can long support the increasing population. There is trouble to-day in England and Germany from this source.

Lord Derby, in a recent address made at Liverpool on the subject of the present depression in England, stated in substance, "after much reflection," that England could not afford to pay large sums for food to America and other countries and compete with them in manufactures, and advised as a remedy wholesale emigration to America and Australia.

While we do not want the paupers from other countries, yet we have ample farming lands and room for all persons devoted to honest industry.

TARIFF AND OTHER LEGISLATION AGAINST THE FARMER.

The duty on articles used by farmers averages about 42½ per cent.

	Per cent.
On iron and steel it is from	35 to 50
Leather	25
China and earthen ware	40 to 50
Hosiery	35 to 60
Hats, bonnets, etc	40
Carpets	50 to 68
Salt	60
Ready-made clothing	50 to 60

The farmer pays the above duties and many more, and the eastern or manufacturing States receive the greater part of the benefit.

Then, again, most all the internal revenue comes from the tax on two items of agricultural products, one produced directly and the other indirectly from the soil.

The revenue from the tax on tobacco in 1878 was $40,091,754 67; spirits and liquors, $60,357,867.58—total, $110,459,622.25; and this comes almost entirely from the southern and western States.

In 1877 Virginia paid internal revenue tax to the amount of $7,932,220, which is more than twice as much as all the New England States combined paid, and West Virginia paid $461,030.50, which is more than the States of Maine, New Hampshire, and Vermont together paid.

The following table shows the receipts from tobacco and spirits in the States named, for the year 1878:

States.	Spirits.	Tobacco.	Aggregate receipts.
Connecticut	$270,328 89	$156,348 63	$580,335 59
Illinois	16,072,539 33	2,829,805 58	19,668,791 32
Kentucky	4,866,480 32	1,746,118 21	6,850,614 15
Maine	15,217 42	46,356 84	70,695 78
Massachusetts	1,055,739 29	693,925 63	2,424,363 77
New Hampshire	65,144 06	30,572 51	228,188 11
Ohio	10,127,172 80	3,476,501 63	14,770,506 37
Rhode Island	39,072 21	63,254 00	246,759 65
Vermont	11,752 32	23,348 14	44,339 49
Virginia	302,580 21	6,145,442 85	6,501,730 29

This tax is mainly paid by agricultural States, as the above table shows, and falls directly or indirectly on the farmer, while manufactures and other industries of the non-agricultural States are aided by protection at the expense of the former.

So in one way or another the burdens of taxation fall heaviest on the farmer and agricultural interests, against which there should be some relief.

AID RENDERED BY DIFFERENT GOVERNMENTS TO AGRICULTURE.

From reliable sources we learn there was expended, for the year 1877, by some of the governments of Europe, in aid of agriculture, the following sums:

Austria and Hungary	£1,099,025 or	$5,495,125
France, for agriculture and commerce	110,672,050 francs or	$20,534,410
Prussia	10,459,343 marks or	$2,612,340
Italy, for agricultural and commerce	10,863,981 livres or	$2,715,995
Russia, for agriculture and public lands	18,434,912 rubles or	$14,826,184
Great Britain	£159,118 or	$795,590
Sweden		$651,737
United States		$17,4686

The following appropriations for the years named will be sufficient to illustrate the difference in the amounts appropriated for the various departments of the General Government:

Departments.	1877.	1878.	1879.
Department of State	$1,377,428 43	$1,353,807 50	$7,134,325 64
Treasury Department	163,015,647 68	159,222,392 61	167,122 213 75
War Department	39,251,271 81	4,245,628 00	68,263,792 48
Navy Department	13,115,176 55	13,745,422 90	20,684,492 83
Interior Department	37,673,054 12	36,674,573 32	38,245,551 74
Post-Office Department	6,422,283 49	3,469,045 00	7,295,389 98
Department of Justice	3,364,343 31	3,424,950 00	3,918,913 94
Department of Agriculture	174,686 96	188,640 00	204,900 00

These figures show how liberally the prosperous and progressive European governments aid and encourage agriculture and how little we do for this great interest. Russia, our great and principal agricultural rival, spends in support of agriculture and in respect of her public lands, more than seventy times as much as the United States, and the little kingdom of Sweden more than three times as much as this great nation.

We have what is called a department of Agriculture, with a commissioner at its head, whose salary is $3,000 per annum, and the next highest salary is $1,900, while there are a large number of employés in other departments whose chiefs of divisions or heads of bureaus receive from $3,000 to $6,000 salary per annum. The salaries of the Agricultural Department are either too low or the others are too high.

In the Senate the Commitee on Agriculture is composed of five, while most of the other committees have from seven to nine members. The Committee on Commerce has nine and on Railroads eleven members. Why should not the Commitee on Agriculture be made equal to any committee of the Senate? The slender aid we render in the way of appropriation and the attention given to agriculture in Congress indicate that we hold it inferior in importance to industries of much less magnitude and moment. The Commissioner of Agriculture within the last few years has done well, considering the limited means at his command, and deserves credit. Considering the vast importance of agriculture to the country, the number of people engaged in it, the interests dependent upon and affected by it, it seems to me that it deserves and demands at our hands more attention and substantial aid. There is nothing sectional or political about agriculture, and all parts of the country are interested in it.

AGRICULTURAL IMPORTS.

A large amount of agricultural products are imported which might and ought to be grown within our own borders.

The following table from the Bureau of Statistics shows the amount and value of sugar and molasses imported from 1869 to 1878:

Statement of imports into the United States of sugar, melada, and molasses during the years 1869 to 1878 inclusive.

Fiscal years ended June 30—	Brown sugar.		Melada and syrup of sugar-cane.		Molasses.	
	Pounds.	*Value.*	*Pounds.*	*Value.*	*Gallons*	*Value.*
1869..	1,229,329,259	$59,728,008	17,294,314	$586,013	53,304,030	$12,011,147
1870..	1,160,460,114	55,655,679	36.101,935	1,258,672	56,373,537	12,888,250
1871..	1,189,155,938	61.249.621	87,113,535	3,296,877	41,401,359	10.192,384
1872..	1,457,294,818	79.129,059	51,673,375	2,066.027	45,214.403	10.627,511
1873..	1,454.124,259	77,953,470	113,670,829	4,722,165	43,533,909	9,901,051
1874..	1,594.306,354	77,459,968	106,952.236	4,424,356	47,189,837	10,947,824
1875..	1,695,726,353	70,015,757	101,768,386	3,313,597	49,112,275	11,685,224
1876..	1,414,254,663	55,702 903	79,702,878	2,415,995	39,026,200	8,157,470
1877..	1,584,162,924	81,187,504	39,461,057	1,654,165	30,188,963	7,808,257
1878..	1,475,480,604	69,642,368	31,520,907	1,123,613	27,490,007	6,764,119
	14,254,295,286	$687,724,337	665,319,452	$24,861,480	435,834,500	$100,983,237

For the year 1878 the value of these imports was about $77,000,000, and for the nine years named we paid for sugar and molasses the enormous sum of about $600,000,000.

Nearly if not all of this vast sum paid to foreign countries might have been saved had the overflowed and swamp lands on the Mississippi and other rivers (a large portion of which is especially adapted to the growth of sugar-cane) been reclaimed and the overflow provided against and prevented.

If the half of $77,000,000 we pay in a single year for sugar and molasses should be expended in reclaiming the swamp lands and preventing the usual overflows of the Mississippi and other rivers, it would not only save to the country annually what we pay out for these articles, but restore from ten to fifteen millions of acres of rich, arable, and most productive farming lands to this and other agricultural uses, now abandoned and utterly useless. How long would France, England, Germany, Russia, or Holland suffer such a vast body of fertile soil to lie idle and go to waste while paying for what might be produced upon it annually nearly a hundred millions of dollars? The power of the general government to levee the Mississippi River I believe is admitted. This being the case, is not the duty of Congress, from an economical stand-point, clear in the premises?

The following table shows many other agricultural products imported by our people, many, if not all, of which might be produced at home, and save to the United States and its people more than a hundred million dollars per annum:

Statement showing the quantities and values of certain imported commodities entered for consumption in the United States, with rate of duty and amount of duties collected, during the fiscal year ended June 30, 1878.

Commodities.	Quantities.	Values.	Total value and duty combined.
Barley, bushels	5,806,191.24	$3,493,556 65	$4,364,485 35
Barley malt, bushels		401,816 06	482,179 27
Cork, manufactured		495,316 00	495,316 00
Eggs, dozen	6,084,063.00	726,030 01	726,020 01
Flax:			
Raw, tons	4,005 20	788,988 00	872,239 47
Seed, bushels	1,284,862.00	1,880,197 00	2,137,169 40
Fruits and nuts		10,084,838 63	13,322,675 62
Fruits and nuts		546,732 56	
Hemp, raw, tons	21,325.31	2,213,838 00	2,695,329 28
Jute, raw, tons	24,663.80	1,100,011 00	1,247,993 81
Melada, pounds	36,691,376.00	1,383,482 00	2,071,445 36
Molasses, gallons	26,855,565 85	6,860,317 33	8,553,251 80
Molasses, gallons	*87,534.00	14,449 22	
Paper materials:			
Rags, pounds	93,002,422.00	2,838,743 65	2,838,743 65
Other, pounds	41,552,618 00	1,150,444 00	1,150,444 00
Rice, cleaned, uncleaned, and paddy	41,414,838.00	1,109,466 01	2,352,566 41
Rice, cleaned, uncleaned, and paddy	*6,063,514 00	209,041 92	
Silk, raw, pounds	1,186,172.00	5,116,707 00	5,116,707 00
Sugar:			
Brown, pounds	*30,368,328.00	2,274,430 38	117,620,284 37
Brown, pounds	1,552,875,112.00	78,969,204 69	
Refined, pounds	216,294.00	16,866 00	27,680 70
Tea, pounds	65,366,449.00	15,665,742 07	15,665,742 07
Tobacco:			
Leaf, pounds	7,458,344.00	3,909,061 34	6,519,481 70
Cigars, pounds	551,056.37	2,117,510 31	4,024,540 22
Other, pounds	172,834.00	46,721 52	133,882 28
Wine:			
In casks, gallons	3,653,760 00	1,874,859 09	3,336,363 10
In bottles, dozen	326,920.00	2,186,647 58	3,190,793 58
Wool unmanufactured, pounds	39,801,161.00	6,995,366 69	9,709,762 89
Straw and palm-leaf manufactures		1,681,330 01	2,263,018 12
Totals		$156,151,723 70	$210,918,125 46

* From Hawaiian Islands.

From the above official table it will be seen that the home value of articles imported in 1878 was	$156,151,723 70
Value of duty added in 1878 was	210,918,125 46

This is a large amount of money paid for agricultural products that ought to be produced in our own country. We find by this table we pay foreign countries for—

Sugar and molasses, annually, nearly	$90,000,000
Tobacco and cigars, annually, nearly	6,000,000
Wine, annually, nearly	4,000,000
Wool, annually, nearly	7,000,000
Barley, annually, nearly	4,000,000
Eggs, annually, nearly	726,000

Eggs come in *free* of duty, and the amount paid is so large for so small an article that the following official table is given, which shows quantity, amount paid, and where from:

Quantity and value of eggs imported into the United States during fiscal year ended June 30, 1878.

Countries.	Quantity.	Value.
	Dozens.	
China	87,800	$6,022
Nova Scotia, New Brunswick, and Prince Edward Island	1,096,963	126,574
Quebec, Ontario, Manitoba, and Northwestern Territory	4,866,981	593,297
Hong-Kong	1,695	100
Mexico	210	44
Total	6,053,649	$726,037

Excluding silk and tea, the successful production of which is yet doubtful, we pay annually more than one hundred millions for products that might be grown in our own country.

In the face of these figures and facts argument is not needed to show that agriculture is of the first and highest importance to our people, and should be properly aided and encouraged.

A nation, like a corporation or individual that lives beyond his income, must in time become poor and in debt. After the war, between 1865 and the panic in September, 1873, we had what is usually called good times, when, in fact, as a nation we were paying to foreign countries much more than we received from them; that is, our imports were more than our exports, as the following official table will show:

Statement showing total net imports of merchandise, coin, and bullion into United States, and the domestic exports of merchandise, coin, and bullion from U. S., from* 1860 *to* 1878, *inclusive.*

Year ending June 30—	Total net imports.	Total domestic exports.	Excess of imports over exports.	Excess of exports over imports.
1860	$335,233,232	$373,189,274		$37,956,042
1861	315,004,726	228,699,486	$86,305,240	
1862	188,902,263	210,688,675		21,786,412
1863	226,796,336	241,997,474		15,201,138
1864	309,305,955	243,977,589	65,328,366	
1865	216,441,495	201,558,372	14,883,123	
1866	430,770,041	420,161,476	10,608,565	
1867	397,220,063	334,763,005	62,457,058	
1868	349,023,682	353,135,875		4,112,193
1869	412,140,841	318,082,663	94,058,178	
1870	431,950,428	420,500,275	11,450,153	
1871	513,033,809	512,802,267	231,542	
1872	617,569,017	501,285,371	116,283,646	
1873	635,467,636	578,938,985	56,528,651	
1874	572,080,910	629,133,107		57,052,197
1875	531,472,529	583,141,229		51,668,700
1876	455,407,836	575,620,938		120,213,102
1877	466,265,045	632,804,962		166,539,917
1878	446,039,908	707,738,783		261,698,875

* Net imports mean total imports less imported merchandise, coin, and bullion afterward exported to foreign countries (specie values).

The above statement clearly shows we paid, between 1860 and 1873, $439,087,737 more for imports than we received for exports.

In 1873 trade reversed, and has been largely in our favor up to this time. During the five fiscal years between 1873 and 1878 we exported or sold $659,072,791 more than we imported or bought. This is a good sign, and shows we are winding on and not off; and if we continue to export largely more than we import, it is only a question of time, which I believe is not distant, when we will be a prosperous and happy people.

Europe, in addition to paying us the large balance of trade now in our favor, according to a recent statement of David A. Wells, expends an average annually of $1,500,000,000 for war and the support of standing armies, while, since the formation of our government, our average expenses annually for these purposes have been about $45,000,000.

In most of the governments of Europe all young men between the ages of twenty and twenty-seven are obliged to serve in the standing armies, thereby taking seven years of each man's life from useful industries.

If we had no other advantages than these named, we would in time grow rich and Europe poor.

AID TO AGRICULTURE.

The General Government has from time to time found warrant in the Constitution to aid directly and indirectly other industries of minor importance. Then why not seriously take in hand the great underlying and fundamental interest upon which all others depend, and do what may be properly done to promote and encourage it? All other interests and industries, in comparison, are subordinate and insignificant.

The extremities should not be nursed and nourished, and the body and heart remain abandoned and neglected.

There is a feeling in the minds of the people that there is too much political agitation and contention in Congress and out of it; that too much effort is made to gain and maintain party supremacy, while weightier matters, and the things that make for peace and tend to promote prosperity, are neglected.

The country and the business interests want quiet and repose. Progress, success and prosperity such as never blessed another nation or people are within our grasp; our manufacturing, commercial, and agricultural supremacy in the world is no longer doubtful, but certain and assured, if only proper effort is made.

Just to what extent, and in what manner, and by what methods, the great agricultural interests of our entire country may be best promoted, it will be the duty, upon the adoption of this resolution, of the Senate and House Committees on Agriculture to determine, and I have no doubt they will bring to the subject that careful and thoughtful consideration which it so justly merits.

France has very recently appointed, through her Department of Agriculture, a commission of able and distinguished persons to examine into the subject of agriculture, and to report what should be done to advance and encourage it.

In urging the attention of Congress to agriculture, I do not wish to detract from the importance of mining, manufacturing, and commerce. The latter especially ought to be considered by Congress. Between 1850 and 1860 American bottoms or vessels carried fully 75 per cent. of our commerce; now only about 25 per cent. This ought not to be, and a remedy is needed.

CONCLUSION.

Heretofore much attention and encouragement has been given by Congress and the departments of the government to banks, railroads, tariff, etc., and but little to agriculture, which is the great interest upon which all depends. It is to be hoped there will be a change for the better, and that the farming interests will receive more attention and encouragement.

President Hayes said, in his last message to Congress:

> "The great extent of our country, with its diversity of soil and climate, enables us to produce within our own borders, and by our own labor, not only the necessaries, but most of the luxuries, that are consumed in civilized countries. Yet, notwithstanding our advantages of soil, climate, and intercommunication, it appears from the statistical statements in the report of the Commissioner of Agriculture that we import annually from foreign lands many millions of dollars' worth of agricultural products which could be raised in our own country."

Mr. President, the world has had many great and able men in state and in war—among them, Alexander, Cæsar, Napoleon, La Fayette, Wellington, Cicero, Burke, Pitt, Franklin, Hamilton, Jefferson, and Lincoln. Not one of these was, nor has the world yet produced, the equal of our great and pure Washington, who was "first in war, first in peace, and first in the hearts of his countrymen." In his eighth message to Congress he said:

> "It is not to be doubted that with reference either to individual or national welfare, agriculture is of primary im ortance. In proportion as nations advance in population and other circumstances of maturity, this truth becomes more apparent, and renders the cultivation of the soil more and more an object of public patronage. Institutions for promoting it grow up, supported by the public purse; and to what object can it be dedicated with greater propriety?"

Here we have, in the early days of our government, when most of the makers of the Constitution were yet alive, from Washington, who did more to give us our liberties and the Constitution we now enjoy than any other man, a direct recognition of the necessity and advantages of, and the power and duty of Congress to encourage and foster, agriculture.

Mr. President, I ask the passage of this concurrent resolution, and trust it may pass unanimously, as I think it ought to.

FORESTRY AND ITS NEEDS.

AN ADDRESS DELIVERED BEFORE THE AMERICAN FORESTRY ASSOCIATION.

BY JNO. A. WARDER, THE PRESIDENT.

Fellow-citizens: Without detaining you with a lengthened discussion upon the etymology of the word forest, or with its original meaning, curious and interesting as such a discussion might be, and without stopping to trace the relations it bore in earlier times to hunting and the chase, we may for the present assume that for us forestry relates essentially to the consideration and especially to the management of the arboreal growths of our woodlands.

Systematic forestry is the application of science and skill to woodcraft; it is the result of the long continued observation and study of all that relates particularly to the planting, treatment, care, disposition, and utilization of trees which have been produced on lands especially set apart for this purpose.

In our language and in our country, the forest usually implies a considerable extent of surface, while a smaller area covered with trees is called a wood, and a more limited number of trees constitute a grove. The portions of our country now occupied by trees are more appropriately called woodlands than forests. Planted in lines of one or of several rows of trees, intended to intercept currents of air, they constitute hedgerows, wind-breaks, or shelter-belts. The coppice or copse is a wood that is intended to be cut off from time to time, when comparatively small.

Let us now consider some of our needs in this department of industry. In all its branches we need information. We need information respecting our native trees. This much, at least, towards a knowledge of forestry should be furnished by our agricultural colleges, and indeed by our country district schools. Every child and certainly every man should be familiar with their appearance under all circumstances, in summer and in winter, standing erect or lying prostrate, in the log or in the lumber pile, or when worked up by the artificer into any of the secondary and ultimate forms to which trees may be applied.

We should be able to recognize any of our trees by their several characters of trunk, branch, twig, foliage, or buds and seeds; we should know them even at a distance, by their habit or form, their individuality. We should know the qualities and the uses of the timber and other products yielded by our trees, including their strength, the density, pliability, elasticity, and durability they possess as timbers, and their peculiar beauty as worked lumber, when needed for finishing and ornamentation.

The forester should be familiar with the native habitat of all our own trees, as well as all those we may wish to introduce from other countries. This information will be of the utmost consequence in enabling him to make proper selections of species that may be successfully planted in any given conditions of soil, aspect, and elevation above the sea level.

Equally so we stand in need of similar information respecting foreign trees, both those that have already been introduced, such as the evergreen pines and spruces from Europe, and the deciduous kinds, such as the larch, maples, oaks, poplars and willows. And we should also know about others that might be brought to our shores from climates so different that they would surely fail, such as the cork oak, from the Mediterranean, the eucalyptus from Australia, and some pines from southern Europe which have been recommended for our middle range of States, though wholly unsuited to them.

In each case we greatly need information which will be of great importance to us respecting what to plant, so that we may be successful, whatever be the nature of the lands to be forested, and whatever the soils, situation, humidity, or elevation. All these questions require a knowledge of the peculiar requisitions of the several species.

We shall also require to know where to plant. Mountainous countries, unfitted for agricultural operations, will at once suggest themselves as proper sites for the forest, particularly where such regions are the sources of rivers, for the maintenance and steady flow of which the forest lands are so important. But even where there are no mountain chains, forests are needed. Broken and hilly lands, and especially abrupt hill-sides, even rocky ridges, and river banks may very appropriately be clothed with trees, and these constitute parts of a forest, particularly in a land of extended plains, basins, and great valleys. In some of these interior basins, as well as near the sea-coasts, and even beside some of our great lakes, there are wastes of land of greater or less extent, and often dunes of blowing sands, that are unfit for agricultural purposes, and which, when cleared and bare, are liable to encroach upon the farms, and to obstruct the rivers; such lands nevertheless, may be planted in forests with the most happy results. Trees not only arrest the progress of the sandy deserts, but also furnish satisfactory results in the timber they produce. But there are extensive regions so happily constituted that they have neither wastes nor mountains; land which seem to be universally well adapted to agricultural uses, and yet they need not only the products, but also the protection of forests. Here then will be found the opportunity for that modification of forestry that consists in planting hedgerows and belts of timber, in which the trees may be set in lines crossing the direction of the prevailing winds. This is the kind of forestry that is particularly applicable to the broad agricultural regions of our own western States, which abound in open prairies and plains. The influence of such shelter belts has already been realized in this country as it was long ago, in other lands, as in the plains of Holland, which are exposed to the blasts from the North Sea, and where one of our natives has become a favorite tree.

And how important is the knowledge which will be so greatly needed, even after these several points shall have been decided, when the very practical question arises in respect to the manner of doing the work, or how to plant. In the arable lands of the West, in the trans-Mississippi region, where by far the largest plantations in the United States have been made, this question has been definitely settled, at least for the prairie regions. It consisted in a thorough preparation of the soil by completely breaking up the grassy sod, which is either cropped or fallowed, and then cross-plowed and harrowed, as for a crop of grain. The land is then laid off with light furrows, as though it were to be planted with corn, and then the trees, cuttings or seeds are committed to the soil. The former are usually planted with a spade, but in some cases they are set in the furrows and covered with a light plow. The cuttings are usually pushed their length into the mellow soil, and are sometimes driven home with a mallet. Seeds, and especially nuts, are dropped into the furrows and covered by the plow, hoe or harrow, according to their size.

Some planters, especially those who set out larger trees, take more pains, digging holes with the spade and planting the forest trees with as much care as they bestow in setting out an orchard of fruit.

In all cases these planters on arable lands expect to cultivate their trees as carefully as a corn-field, for one, two or three years, according to their growth, or until they shade the ground.

In the Eastern States, where any attempts at forest planting have been made, it is believed that the spade has been used in most cases, though many of the trees grown by the Messrs. Fay, on the coast of Massachusetts, are said to have been produced from seeds strown in furrows made among the rocks by an ox-plow, and then lightly covered.

In the Southern Atlantic States, large tracts of exhausted lands have grown up with a thick forest of pines that have been self-sown. The old field pines, *P. tæda*, are not considered valuable, however.

European methods are usually quite different from those adopted in this country, except that in some cases the newly cleared forest lands, after being plowed, have been sowed broadcast with tree seeds, notably conifers, either alone or with a crop of rye, and perhaps other grains. The usual methods of renewing the forest are either *pitting*, *notching*, seeding and self-seeding or natural reproduction, which last, when not entirely satisfactory in its results, is complemented by filling in the gaps with useful and desirable species, planted by the first named process; this is particularly practiced with the oaks, and these are usually planted of large size.

Pitting consists in digging holes, at suitable intervals, in which the young trees are planted.

Notching is a very simple process, cheap and primitive. The tool used is a peculiar, narrow and thick spade, which is thrust down into the sod, withdrawn and again inserted so that the two cuts shall be at right angles, and before withdrawing the tool the cleft is opened, and the plant is inserted by an assistant and held in the angle thus formed until the spade is withdrawn, when the earth is pressed against it with foot, and the little tree is left to take care of itself. Attempts to plant in this way have not been very satisfactory in our country, especially where blue grass abounds.

In some cases the German foresters are reported to have adopted a very simple method of seeding—furrows are plowed, into which the newly gathered pine cones are strown and allowed to shed their seeds on the fresh earth where they vegetate. In some of the best managed estates of Austria *self-seeding* is practiced in mixed forests, especially with deciduous species. The plan is to clear the land partially instead of making a clean cut. Mother trees of desirable kinds are left here and there, so as to produce a partial shade for the protection of the young plants that spring from the self-sown seeds. These mother trees are removed in a few years to give place to the young growth, no longer needing their motherly protecting shade.

There is another very important department of forestry, respecting which we have great need for information of a reliable character, though we have many among us who can talk and write glibly enough respecting the *influence of forests* upon *climate* as affecting *temperature*, *rain-fall*, *hygrometricity* and *wind motion*, their influence upon *health disease*, and upon the *water supply*.

All these interesting questions will require long continued observations, and carefully executed experiments, before we can hope to reach any safe conclusions.

Who among us has yet bestowed sufficient attention to the mutual relations of our native and introduced trees to enable him to indicate which of them are obnoxious to one another, and which may be planted in *mixed groups?* Yet it is evident that just here we have much to learn. As to their varied characters in this respect we need to know respecting each of the species:

1st. *The term or rotation* of trees, the time required by them to reach their maximum of profit. And this is so various that it becomes an important factor in the matter of grouping.

2d. The *hight* which the trees may attain at maturity is an important element in the same problem.

3d. As also is the *rapidity of their growth*, for some will, in a few years, so tower above their fellows as to impede their advance.

4th. Some species are found to be really obnoxious or even *poisonous* to others. Such should never be grouped together.

5th. Some trees are *so exclusive* that they should always be planted in masses by themselves, while others seem to require the protecting care of *nurses* or companions.

Upon all these points we are as yet almost wholly ignorant, and we shall need a long series of careful observations to enable us to decide what is best for *us*. These are some of the many experiments which are devolved upon us when we undertake to build up a system of enlightened *American Forestry*.

There is a vast field of inquiry before us respecting the *benefits* of *forests*, which must still remain unsolved, for who is prepared to set forth duly their advantages.

1st. *To man*, in their *æsthetic* and improving influence upon society.

2d. In their effects upon *our health*, and whether they be really deleterious, or, as appears to be true in many cases, advantageous, by purifying the atmosphere and by fending off malaria.

3d. In their contributions to our comfort, directly and indirectly.

4th. In that very interesting item that relates to our pockets, as they may be affected by the outlay per acre required in building up the forest, and the probable income that may be expected at the end of a term of years.

5th. Or, their benefits to our *domestic animals*, in the important matters of *shelter*, *comfort*, *health* and *food;* or, to our *farm crops*, by means of the *shelter* they afford from storms and the *consequent increase* in the yield on such farms over similar crops in the same region where they are fully exposed to the elements.

When we come to the consideration of a *systematic forestry*, we shall at once find how great is our need of reliable information. Let us indicate a few of the other points upon which our ignorance is painfully conspicuous: Who among us can render a satisfactory statement as to the proper rotation or period of our own trees, or indicate the proper *succession* of different species, which may best follow each other; or, who can inform us what *preparatory* species should be planted on barren wastes, in order to bring the land into a condition to produce valuable forests, as is done in many regions of Europe, where *reboisement* or re-foresting the mountain wastes, is successfully practiced, and in most of the elevated forest regions of Germany, where the Erica is so valued as a nurse plant that a clearing is never replanted or resown until the heaths have again taken possession of the surface.

Who can indicate for our benefit, and enable us to make the most profitable disposition of the lands we propose to devote to forestry, as to what will be the best proportion of the species we shall plant under any given condition?

In the matter of grouping, who can tell us what species of trees may be considered consociates, and which are dissociates? Who can tell us how, if at all, we can combine needle-leaved trees with those that are broad-leaved? or, which of either grand division will thrive best when mingled together, or, which species may require to be planted in masses alone.

What do we know and need to know respecting the necessity for protection of the planted forests against animals, by means of walls, ditches, hedges, or fences, whether these last be of wood, of stone, or of wire, and which will be best and most economical under any given conditions! Against insects in their multiform, numerous and destructive invasions of the forest. Against fires, by means of laws and penalties executed by guards and forest warders.

Then again, who among us is qualified to go into a piece of woodland and make correct estimations as to the value of the crop, and give us the exact contents by surveys and measurements, or to open, with the property in question, a proper system of accounts? Who can tell us how to arrange for the forest management of large timber growths; of coppice, with its appropriate treatment, thinning and cutting from time to time; and of the mixed forests, or give us directions as to the proportions of their several ages, in order to make such most profitable, and a continuous source of revenue!

Having at length settled all the necessary preliminaries, and determined upon the system to be pursued, when, at last, the forest shall have reached maturity; or in case we may come into possession of such a property, in ripe condition, whether by inheritance from some previous forester, or, as is usually the case in this country, from the hand of nature—who shall instruct us in the best method of harvesting the grand result by felling or cutting, and determine among the diversity of opinions as to the best season for the work, whether summer or winter, and decide whether the clearing shall be partial or entire, by a clean cut or by leaving mother-trees for self-seeding of the land?

Then as to the disposition of the crop, separating the various parts according to their adaptation to their several uses; as primary products, consisting of logs, prepared for shipment; spars, or hewed timbers, for construction; sticks, for piles and cribs; cross ties, sawed or hewed; poles, props, for mines, or as cord-wood, fuel; staves, shingles, or sounding-boards. Or as secondary products, embracing barks, fibers, wythes, roots, pitch and resin, oils, galls, dye-stuffs, nuts, seeds, sugars, gums, charcoal.

It will at once be seen that much has to be learned in forestry management.

So in the matter of transportation, the forester must be something of an engineer also, to enable him to direct the construction of the means of transport, consisting of timber-chutes and log-ways, with the needed tools and appliances for their management; of sluices, canals, and booms for the conveyance of timbers by water; and the construction of rafts.

He will also need to make selection of wagons, sleds, and railways for land transport, which will require also the construction of roads and bridges.

Nor will the consideration of the means of changing these primary products into the advanced forms in which they are presented to the markets be beyond the province of him who undertakes the management of large forest areas. Such a director must be able also to oversee the various mills and factories, required for changing the crude products into forms adapting them to their several uses and fitting them for carriage to the more or less distant markets.

And we have no forest schools in which to learn from long trained instructors all these necessary things.

We have no teachers thus trained, and therefore we are thrown upon our own resources.

The question may now very probably arise in your minds, how shall

all these various needs be supplied for the advancement and benefit of the American forester. Feeling our needs of information on the numerous branches of our prospective labors, we shall be compelled to go to work in good earnest. We must begin at the beginning and pass along by slow degress toward the desired end.

We shall be obliged to inaugurate a vast experiment to be carried on at many experimental stations. Yes! We must have a long series of experiments.

We have before us an alarming prospect of the labors to be performed. Discouraging, truly, to the timid ones, on account of hard work, and also on account of the length of time that must be consumed in the performance of such numerous experi ments and investigations.

Centuries of laborious and careful observations directed by the highest skill and science will be required to solve all of these numerous questions; and yet their solution must be attempted and mainly completed before we can claim to have established an American forestry worthy of the name.

Let us not be disheartened, however, by the difficulties of the way. Perseverance and the acknowledged aptitude of the American people to cope with any and all difficulties will be our guaranty of eventual success.

Succeed we *will*, succeed we shall! Let no one doubt as to the final, though distant, result.

Yes! let all these experiments go on—they must be tried, since, in many respects, we have new conditions as well as new men to make the observations, and new species to deal with—but, meanwhile, we should not be too proud to learn from others, who were once similarly situated, and who have for generations been pursuing similar investigations, from which they have evolved and are still evolving the most important results both in the principles and in the practices of the art, so that they may fairly claim to have established a systematic forestry.

The forests of Europe lie open before us. The forest schools are conducted by learned professors; practical, trained foresters are to be seen on every estate. The elèves of these schools are to be found in every *revier* of every forest, carrying out in practice the lessons acquired in long years of study. Let us ask of them, and be willing to learn whatever is available and applicable to our own conditions.

We cannot all go to them as pupils, though it would be well to send some of our young men to pursue a thorough course of study, as Great Britain has sent them to Germany; and men thus educated will one day be needed here, when we come to organize our own schools of forestry.

Meanwhile let a suitable person be sent to observe and report on behalf of this great interest. He should be a man of broad powers, one trained to accurate observation; familiar already with our own forest trees, with vegetable physiology, and possessing a general knowledge of natural history. He should be a man of well balanced mind, who would not be carried away with theories and fancies, nor should he be hampered by any preconceived notions of his own, but who would be able calmly to weigh and consider all that he might see and hear, and carefully to sift the wheat from the chaff. We should need a man who knows how to adapt and fit to the peculiar conditions of our land, with its varied soil and climate, the sum of the accumulated observations of European observers, and the resultant skill in forest management.

The government cannot in any way so effectually aid this great agronomic interest as by spending the moderate amount needed for the outfit and support of a European forestry commission, such as was asked for by the gentlemen who have submitted the memorial that is now under their consideration, and awaiting the reports of their committees.

Such, my friends, you will agree with me in feeling to be the crying want in our pursuit, the great need we have experienced in our attempts to begin the building of a creditable system of American forestry; and such a commission and report, perhaps you will also agree, would be the corner stone to the foundation upon which we may hope to erect a noble superstructure in the future.

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Centennial History of Licking County.
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Diptera of North America.
Low's Domestic Animals of Great Britain.
Business Atlas. Rand and McNally.
Patent Office Reports. 41 vols.
The Farmer's Library.
Stevens' Book of the Farm. Vols. 1, 2.
American Poultry Yard. Brown.
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The Naturalist's Library. 34 vols.
Stevens' Manual of British Beetles.
Natural History. 3 vols.
Natural History of New York.
    Part 5, Agriculture. Emmons.
    Vols. 1 and 2, Botany. Torrey.
Mysteries of Bee-Keeping.

The American Bee-Keeper's Manual.
The Cottage and Farm Bee-Keeper.
Weeks on Bees.
Drury's Exotic Entomology. Vols. 1, 2, 3.
Curtis' Exotic Entomology. Vols. 1 to 8, inclusive.
Insects Injurious to Vegetation. Harris.
Manual of Entomology. Burmeisters.
Episodes of Insect Life. 3 vols.

SHEEP AND SWINE.

American Berkshire Record.
Youatt and Martin on the Hog.
United States Merino Sheep Register.
The Sheep: Its Structure, Economy, and Diseases.

AGRICULTURAL STATISTICS.

The following tables exhibit the agricultural products of Ohio, animals "died from disease," sheep killed and injured by dogs, etc., as reported by township assessors to county auditors in May, 1879:

WHEAT, RYE, AND BUCKWHEAT PRODUCED IN OHIO IN 1878.

Counties.	Wheat.		Rye.		Buckwheat.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Adams	18,865	150,372	354½	2,381	32	238
Allen	24,407	447,316	486	7,135	60	362
Ashland	33,001	600,518	401	5,904	120	871
Ashtabula	11,735	220,464	362	5,200	444	4,358
Athens	14,343	164,325	415	4,058	182	2,013
Auglaize	26,252	473,655	362	5,864	165	2,203
Belmont	23,154	303,503	811	8,729	165	1,175
Brown	29,679	312,441	2,499	20,579	75	818
Butler	39,653	564,944	284	2,994	126	1,804
Carroll	16,856	244,149	729	7,909	158	1,140
Champaign	34,868	634,462	252	3,450	99	1,066
Clarke	33,882	621,225	643	9,632	23	404
Clermont	19,707	249,354	2,139	19,401	156	1,914
Clinton	25,505	371,905	704	9,073½	120	1,223
Columbiana	21,748	289,609	1,184	14,045	394	3,779
Coshocton	28,533	440,376	604	6,634	339	2,377
Crawford	29,883	617,786	215	3,190	40	409
Cuyahoga	8,503	184,346	1,526	30,733	30	303
Darke	47,484	852,534	1,375	23,024	283	2,802
Defiance	21,243	366,508	479	8,405	404	4,816
Delaware	18,188	347,708	866	12,593	197	1,197
Erie	21,936	515,318	181	2,751	286	2,363
Fairfield	40,849	624,707	634	8,056	49	475
Fayette	16,935	279,062	790	12,590	33	770
Franklin	29,044	567,064	938	15,467	121	1,566
Fulton	24,543	446,486	529	7,375	998	11,956
Gallia	27,269	267,124	298	2,344	124	1,211
Geauga	5,561	94,834	152	2,157	75	639
Greene	39,321	702,759	447	6,552	22	453
Guernsey	15,455	180,959	793	7,530	324	2,574
Hamilton	11,547	158,133	2,048	27,069	173	3,059
Hancock	41,808	822,453	255	4,207	98	999
Hardin	25,264	569,691	138	2,443	136	1,188
Harrison	13,539	211,107	408	4,277	104	1,062
Henry	18,998	359,175	1,707	34,470	486	7,262
Highland	36,491	403,789	865	7,726	43	372
Hocking	10,606	49,662	581	4,245	285	2,573
Holmes	27,764	502,718	796	9,528	224	1,675
Huron	30,344	649,941	210	2,218	107	1,128
Jackson	11,448	75,411	143	901	173	1,546
Jefferson	21,781	274,346	351	3,980	69	468
Knox	31,058½	478,026	955	10,628	309	2,281

WHEAT, RYE, AND BUCKWHEAT PRODUCED IN OHIO IN 1878—Continued.

Counties.	Wheat.		Rye.		Buckwheat.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Lake	6,395	124,272	563	8,650	306	4,677
Lawrence	16,735	114,394	181	1,312	62	491
Licking	30,900	470,851	1,342	19,065	493	5,608
Logan	30,535	569,474	373	5,916	149	1,084
Lorain	18,796	395,968	227	3,808	20	205
Lucas	12,406	195,516	569	9,434	908	10,744
Madison	9,399	177,741	914	14,438	35	387
Mahoning	11,470	172,141	720	9,604	280	2,356
Marion*	17,699	334,867	117	1,955	44	507
Medina	16,853	331,757	450	7,582	53	411
Meigs	19,608	210,207	630	5,042	194	2,791
Mercer	24,381	375,453	560	8,028	109	940
Miami	36,672	685,190	692	10,115	94	761
Monroe	16,805	189,118	2,233	19,924	268	2,222
Montgomery	36,669	584,812	460	6,623	17	156
Morgan	16,294	236,977	441	4,403	149	1,406
Morrow	13,696	249,313	661	8,458	130	790
Muskingum	28,118	417,277	1,025	13,799	166	1,423
Noble	14,852	186,891	597	6,918	81	810
Ottawa	13,680	255,121	356	6,679	79	1,039
Paulding	7,704	115,367	498	6,405	243	2,244
Perry	16,207	209,006	891	10,565	180	1,666
Pickaway	39,637	682,593	521	7,256	50	734
Pike	11,570	97,847	203	1,237	68	489
Portage	15,823	274,290	604	8,363	192	1,504
Preble	29,956	422,757	472	5,958	68	445
Putnam	22,077	358,613	1,252	19,587	159	1,671
Richland	36,030	669,887	730	9,499	143	1,118
Ross	34,244	480,717	819	8,406	48	437
Sandusky	41,474	835,523	291	5,075	198	1,659
Scioto	11,615	114,445	41	183	98	713
Seneca	59,969	1,235,963	161	2,936	64	628
Shelby	27,861	454,370	386	5,008	260	1,914
Stark	52,925	1,001,666	470	6,779	71	735
Summit	25,955	518,979	352	5,150	41	1,830
Trumbull	9,976	161,801	564	6,986	481	4,198
Tuscarawas	32,733	567,480	601	7,310	184	1,147
Union	17,442	308,170	273	4,407	74	633
Van Wert	15,721	251,823	971	12,932	267	2,456
Vinton	7,599	73,601	328	2,862	177	1,707
Warren	26,392	392,482	608	5,915	195	2,270
Washington	28,916	403,583	2,266	20,896	360	4,036
Wayne	48,932	1,035,862	403	12,023	62	483
Williams	28,597	501,098	228	2,339	198	1,926
Wood	24,417	449,296	971	18,060	734	8,377
Wyandot	29,103	633,959	117	1,225	50	698
Totals	2,123,938	35,218,783	58,041	756,502	16,153	165,448

Oats, Barley and Corn produced in Ohio in 1878.

Counties.	Oats.		Barley.		Corn.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Adams	8,758	173,051	33	869	34,527	657,295
Allen	9,082	278,175	99	2,342	34,864	1,098,676
Ashland	17,043	601,982	207	4,515	25,895	1,031,663
Ashtabula	20,640	694,945	66	1,492	15,225	607,053
Athens	3,392	70,142	....	....	21,405	648,994
Auglaize	11,695	366,185	426	8,980	37,182	1,257,786
Belmont	12,967	385,336	205	3,791	28,734	1,212,305
Brown	10,872	218,424	28	586	46,656	1,188,874
Butler	7,997	224,887	11,841	435,150	63,041	2,946,815
Carroll	13,873	474,267	9	311	14,813	512,376
Champaign	9,984	259,106	55	1,897	51,478	2,210,505
Clarke	7,009	220,314	239	7,602	45,575	1,939,213
Clermont	11,866	285,324	63	1,236	46,601	1,270,838
Clinton	5,456	147,193	40	1,480	67,381	2,700,031
Columbiana	19,169	698,506	87	1,560	20,370	807,013
Coshocton	11,009	333,480	13	197	35,655	1,242,284
Crawford	17,283	617,968	232	4,658	32,048	1,531,111
Cuyahoga	15,292	562,522	217	5,915	12,993	599,878
Darke	20,670	755,020	1,221	32,741	75,861	3,098,739
Defiance	11,600	334,193	88	1,961	21,626	717,391
Delaware	8,756	306,998	13	539	43,125	1,834,779
Erie	8,640	313,184	1,307	33,635	18,304	864,632
Fairfield	6,237	158,368	488	18,471	55,070	2,274,639
Fayette	1,830	50,162	....	....	74,539	2,905,785
Franklin	7,083	245,845	79	2,687	71,711	3,080,713
Fulton	12,382	410,850	48	1,016	24,468	1,135,774
Gallia	4,881	83,712	....	....	26,246	657,830
Geauga	9,950	393,170	16	437	7,363	361,804
Greene	4,784	166,045	442	14,967	58,363	2,502,282
Guernsey	9,846	279,802	32	616	23,190	791,232
Hamilton	6,473	148,483	3,086	104,048	31,687	1,182,722
Hancock	10,377	325,008	54	1,136	49,844	1,779,230
Hardin	7,859	245,584	71	1,913	38,741	1,493,965
Harrison	7,305	234,789	30	984	16,145	644,322
Henry	7,402	238,527	45	982	27,542	1,021,309
Highland	7,568	159,521	52	447	61,781	1,997,666
Hocking	4,121	73,827	4	41	17,759	526,357
Holmes	16,010	554,092	78	1,540	25.007	813,857
Huron	19,657	718,739	305	6,856	31,746	1,232,399
Jackson	7,181	123,175	2	12	20,853	448,584
Jefferson	10,618	371,237	99	2,033	16,789	631,379
Knox	12,750	386,317	20	303	41,555	1,544,116
Lake	6,242	228,730	980	24,407	7,110	268,593
Lawrence	5,603	95,414	29	542	21,559	477,554
Licking	11,609	363,062	15	433	55,419	2,351,551
Logan	6,007	189,596	23	[illegible]	41,364	1,758,912
Lorain	14,185	557,432	935	21,912	19,191	849,078
Lucas	6,964	223,195	289	6,829	16,734	1,030,472
Madison	2,444	69,811	....	....	73,869	3,226,366
Mahoning	14,181	535,763	83	1,652	14,655	681,376
Marion	10,964	382,036	149	2,502	41,888	1,540,487
Medina	15,764	577,702	42	1,164	17,301	870,895
Meigs	4,959	85,669	75	1,468	19,432	523,771
Mercer	16,548	510,010	203	4,949	35,065	1,238,684
Miami	14,186	483,153	1,412	43,577	57,184	2,468,242
Monroe	11,400	253,563	24	535	20,879	590,886
Montgomery	15,658	523,292	2,494	86,551	50,336	2,017,341
Morgan	4,236	105,194	3	79	18,997	707,842
Morrow	12,818	436,135	20	293	29,103	984,138

OATS, BARLEY AND CORN PRODUCED IN OHIO IN 1878—Continued.

Counties.	Oats.		Barley.		Corn.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Muskingum	9,446	272,650	96	2,558	36,229	1,371,174
Noble	6,418	145,223	....	....	21,291	735,733
Ottawa	3,299	93,719	157	7,974	13,102	368,540
Paulding	3,688	85,683	228	7,179	11,062	224,960
Perry	4,294	98,066	136	6,859	20,642	743,256
Pickaway	2,281	72,013	92	3,190	92,076	3,726,238
Pike	6,830	126,759	461	15,980	29,847	828,706
Portage	14,419	497,068	36	738	13,360	706,966
Preble	14,790	462,856	769	22,684	53,747	1,973,987
Putnam	5,701	153,544	57	1,518	35,773	1,071,659
Richland	23,738	806,274	146	4,168	31,243	1,020,412
Ross	3,367	67,269	40	1,745	78,169	2,761,170
Sandusky	11,156	373,825	270	6,357	31,263	1,226,374
Scioto	8,475	135,274	186	5,167	24,085	559,247
Seneca	16,967	572,663	73	1,697	39,205	1,360,511
Shelby	16,651	557,904	777	19,266	42,215	1,584,375
Stark	25,439	1,018,082	476	15,264	27,748	1,477,532
Summit	14,284	542,382	63	14,010	15,422	1,077,945
Trumbull	16,304	561,842	66	4,275	14,998	934,028
Tuscarawas	18,610	621,542	136	3,252	24,466	822,763
Union	7,300	223,443	4	180	51,430	2,130,561
Van Wert	8,193	226,709	90	2,039	30,056	808,707
Vinton	3,120	59,977	....	....	14,419	375,631
Warren	10,007	292,252	5,012	191,402	58,030	2,374,900
Washington	10,476	212,610	3	109	25,516	668,193
Wayne	24,123	912,403	285	6,870	32,426	1,234,570
Williams	13,591	437,289	38	1,099	24,900	838,348
Wood	14,887	450,618	531	11,880	52,503	1,880,521
Wyandot	8,326	283,180	17	315	35,313	1,360,716
Totals	937,315	29,671,231	38,461	1,265,299	3,039,380	114,839,127

TIMOTHY AND CLOVER PRODUCED IN OHIO IN 1878.

Counties.	Timothy.		Clover.			
	Acres.	Tons hay.	Acres.	Tons hay.	Bushels seed.	Acres plowed under for manure.
Adams	10,151	9,616	1,883	685	1,609	164
Allen	11,398	21,322	5,050	4,421	2,211	434
Ashland	24,523	30,313	7,325	6,668	4,414	509
Ashtabula	46,377	54,396	361	575	33	59
Athens	18,343	22,078	367	285	23	24
Auglaize	9,901	11,673	3,332	3,822	1,975	411
Belmont	28,262	32,802	1,576	1,604	464	62
Brown	13,979	12,161	3,113	741	49	391
Butler	8,032	10,166	13,887	3,228	1,454	3,659
Carroll	25,088	29,309	3,709	4,034	3,560	7
Champaign	11,882	12,417	4,638	4,491	3,458	694
Clarke	11,779	16,009	8,717	4,522	3,340	2,097
Clermont	16,522	14,681	5,399	994	124	1,439
Clinton	9,278	11,400	1,347	1,161	647	519
Columbiana	34,751	46,370	6,462	8,287	5,054	100
Coshocton	20,507	23,774	3,469	3,129	2,621	144
Crawford	16,746	23,722	10,029	13,387	6,146	386
Cuyahoga	34,295	41,411	105	159	9	8
Darke	9,723	12,161	13,321	7,341	3,288	3,618
Defiance	12,835	17,183	3,539	3,482	4,504	484
Delaware	25,471	33,315	3,028	3,976	2,934	467
Erie	9,382	12,999	3,640	3,790	2,607	1,010
Fairfield	12,999	18,440	5,787	5,657	7,454	261
Fayette	7,590	10,182	1,365	240	147	73
Franklin	15,343	20,839	3,380	2,588	801	1,416
Fulton	16,673	21,161	3,328	3,715	3,668	229
Gallia	11,928	10,053	673	410	90	207
Geauga	31,594	37,516	365	508	7	51
Greene	9,325	13,990	8,569	4,111	1,581	2,817
Guernsey	29,110	34,503	1,051	996	441	6
Hamilton	12,330	16,514	3,813	3,793	99	533
Hancock	17,172	24,508	6,075	7,061	5,111	537
Hardin	13,138	17,670	3,490	4,256	1,894	378
Harrison	27,357	34,846	667	874	497	22
Henry	7,767	10,006	2,200	2,723	2,460	168
Highland	15,236	15,950	839	590	883	30
Hocking	11,818	12,683	892	817	520	38
Holmes	13,799	18,050	9,547	11,673	7,598	267
Huron	31,693	38,649	6,193	6,447	4,011	344
Jackson	13,582	12,848	199	38	23	23
Jefferson	23,954	30,348	1,473	1,371	3,110	35
Knox	22,753	27,914	5,174	5,511	3,744	239
Lake	14,047	17,240	843	1,266	425	233
Lawrence	6,100	5,742	1,618	405	33	245
Licking	30,865	42,685	3,145	2,893	1,580	76
Logan	13,200	16,814	5,702	5,756	3,519	232
Lorain	40,462	49,720	1,427	1,670	1,654	63
Lucas	11,704	16,841	2,177	2,647	2,233	428
Madison	14,167	19,970	415	257	48	115
Mahoning	31,971	42,153	5,130	6,653	5,415	446
Marion	15,929	20,772	5,329	6,563	3,611	243
Medina	33,991	41,687	3,272	3,715	2,517	443
Meigs	13,528	14,928	873	455	51	437
Mercer	10,510	13,357	4,317	4,560	2,671	471
Miami	7,196	9,110	10,440	5,607	2,009	3,178

TIMOTHY AND CLOVER—Continued.

Counties.	Timothy.		Clover.			
	Acres.	Tons hay.	Acres.	Tons hay.	bushels seed.	Acres plowed under for manure.
Monroe	19,004	17,609	1069	842	576	17
Montgomery	10,427	12,536	17,602	11,312	2,247	4,604
Morgan	16,524	19,811	1,459	1,491	1,075	149
Morrow	28,033	35,975	2,513	3,145	1,607	48
Muskingum	32,239	38,022	2,773	2,407	963	89
Noble	16,105	19,510	389	321	94	....
Ottawa	7,953	11,488	1,221	1,803	1,110	212
Paulding	5,740	7,192	786	807	729	105
Perry	17,867	20,622	1,184	1,044	1,146	24
Pickaway	11,895	10,725	4,696	2,595	2,039	432
Pike	6,300	5,553	1,071	208	29	121
Portage	36,124	44,650	2,908	3,798	2,136	415
Preble	7,829	7,777	15,929	4,073	2,436	2,452
Putnam	14,174	15,057	3,203	3,821	3,489	420
Richland	22,515	28,041	13,206	11,133	5,981	739
Ross	11,339	8,146	4,796	1,180	970	722
Sandusky	11,325	13,921	8,198	1,018	3,485	680
Scioto	8,665	7,629	539	288	9	165
Seneca	20,360	22,954	13,570	14,618	6,582	2,175
Shelby	8,080	9,014	5,318	4,027	2,953	667
Stark	28,936	42,216	13,147	18,538	6,252	1,497
Summit	22,788	31,951	4,882	6,910	2,158	968
Trumbull	56,602	69,170	977	1,278	577	74
Tuscarawas	25,349	32,832	10,716	11,481	8,744	475
Union	17,980	25,104	2,269	2,921	869	203
Van Wert	10,684	13,762	2,528	2,385	773	248
Vinton	10,347	9,738	265	141	35	1
Warren	10,584	12,120	6,364	1,416	285	2,129
Washington	23,332	25,417	1,874	1,540	294	278
Wayne	24,015	36,513	14,631	20,722	8,640	763
Williams	16,065	19,785	4,956	4,344	4,722	289
Wood	14,791	20,485	4,072	4,704	3,700	373
Wyandot	14,751	19,196	4,843	5,466	3,447	460
Totals	1,586,778	1,951,488	388,219	338,985	199,581	53,021

FLAX AND POTATOES PRODUCED IN OHIO IN 1878.

Counties.	Flax.			Potatoes.		Sweet potatoes	
	Acres.	Bushels seed.	Pounds fiber.	Acres.	Bushels.	Acres.	Bushels.
Adams	12	106	....	462	21,406	20	2,137
Allen	1,372	10,349	172,598	892	40,379	41	355
Ashland	1,644	13,525	798,831	1,005	67,679	6	296
Ashtabula	74	643	27,000	3,120	191,045	......	....
Athens	....	....	....	1,126	69,068	23	2,574
Auglaize	1,231	9,936	41,775	1,015	60,490	9	172
Belmont	1	4	30	1,340	100,085	15	1,603
Brown	5	40	....	1,795	105,898	24	1,848
Butler	633	5,105	25	1,303	89,000	44	3,280
Carroll	5	....	18	449	34,209	1	141
Champaign	557	5,623	....	676	62,144	18	1,373
Clarke	1,079	11,282	182,500	1,012	92,070	82	5,437
Clermont	167	1,400	2,600	7,002	384,322	197	5,743
Clinton	933	8,791	24,963	1,496	92,452	45	4,404
Columbiana	222	2,200	43,960	1,409	95,374	7	525
Coshocton	1	1	10	806	57,116	3	266
Crawford	331	2,744	....	1,127	74,385	10	526
Cuyahoga	....	....	....	3,114	207,548	1	565
Darke	2,992	32,359	143,515	1,930	154,862	46	2,735
Defiance	8	43	....	943	67,738	6	333
Delaware	588	7,104	73,708	1,040	72,688	1	226
Erie	4	46	....	1,757	151,035	2	418
Fairfield	2	25	....	1,426	104,491	95	6,857
Fayette	41	604	5,004	500	38,705	29	1,731
Franklin	62	....	116	2,545	156,481	8	1,148
Fulton	67	685	6,000	1,172	89,406	10	1,428
Gallia	....	....	....	1,353	93,998	25	2,101
Geauga	259	2,351	105,003	1,795	86,193	......	....
Greene	1,980	18,224	731,631	918	59,927	40	2,847
Guernsey	1	9	....	583	38,894	13	854
Hamilton	....	....	....	6,016	284,032	147	11,645
Hancock	2,432	20,615	240,035	1,074	72,277	14	1,197
Hardin	797	7,808	16,050	865	70,756	6	440
Harrison	....	....	....	371	28,310	4	405
Henry	4	38	70	964	80,860	2	228
Highland	2	22	....	1,316	78,957	30	2,589
Hocking	....	....	....	1,027	63,377	69	3,787
Holmes	4	12	75	817	62,650	6	533
Huron	193	1,351	6,000	1,015	68,103	5	760
Jackson	2	14	30	643	35,599	8	596
Jefferson	1	4	....	753	49,547	4	134
Knox	2,367	21,135	32,408	1,170	73,833	10	749
Lake	27	238	....	2,143	96,807	1	150
Lawrence	....	....	....	791	35,540	40	2,758
Licking	229	2,424	....	1,660	122,248	14	523
Logan	291	2,673	....	666	52,715	10	1,070
Lorain	75	633	25,340	1,566	116,625	21	2,570
Lucas	115	1,247	....	2,181	145,522	4	319
Madison	138	1,363	....	780	43,629	7	309
Mahoning	1,244	11,077	1,031,568	1,289	107,923	9	207
Marion	388	3,466	16,650	887	60,061	5	799
Medina	1,590	10,833	405,000	991	61,222	1	135
Meigs	1	8	150	2,106	121,496	30	3,020
Mercer	1,295	11,336	279	707	50,040	2	45
Miami	5,704	67,404	990,985	1,195	103,168	41	2,843
Monroe	1	9	150	1,167	55,801	8	646
Montgomery *	2,594	25,949	855,946	1,687	97,969	96	8,420

FLAX AND POTATOES PRODUCED IN OHIO IN 1878—Continued.

Counties.	Flax.			Potatoes.		Sweet potatoes	
	Acres.	Bushels seed.	Pounds fiber.	Acres.	Bushels.	Acres.	Bushels.
Morgan	....	....	....	747	45,232	61	4,713
Morrow	1,394	12,686	....	870	54,867	....	....
Muskingum*	....	....	....	1,550	108,262	82	10,747
Noble	....	....	....	434	27,227	4	345
Ottawa	1	4	....	736	36,318	8	348
Paulding	74	573	....	472	25,775	6	414
Perry	14	124	130	1,027	69,190	33	1,829
Pickaway	....	....	....	1,032	69,101	34	2,353
Pike	5	2	130	782	36,090	16	1,168
Portage	710	7,259	3,267,770	2,441	196,971	1	150
Preble	4,181	42,976	44,755	902	67,451	37	2,768
Putnam	152	1,337	6,300	1,168	90,276	6	479
Richland	248	2,121	....	1,445	91,052	2	219
Ross	....	....	....	1,124	68,400	12	1,404
Sandusky	1	10	15	1,487	99,056	11	1,046
Scioto	....	....	....	1,511	55,324	42	2.029
Seneca	336	2,764	10	1,343	76,651	10	634
Shelby	2,064	21,549	13,025	959	69,092	10	366
Stark	224	1,896	214,800	1,570	134,386	3	644
Summit	....	....	....	1,290	86,227	*	332
Trumbull	1,600	15,319	1,371,130	708	104,353	6	236
Tuscarawas	4	28	....	1,106	90,110	3	137
Union	778	7,450	516,400	721	57,781	1	169
Van Wert	990	8,041	82,441	852	41,157	12	657
Vinton	....	....	....	519	32,200	11	944
Warren	1,439	14,647	189,089	1,691	109,787	162	13,872
Washington	1	2	25	2,308	125,786	104	10,529
Wayne	406	7,604	350,040	1,633	94,170	22	1,114
Williams	176	1.569	....	880	66,997	12	792
Wood	85	633	....	1,386	98,602	7	258
Wyandot	338	3,217	....	949	54,072	2	212
Totals	48,986	474,669	12,036,083	116,513	7,580,118	2,135	159,708

* Acreage not reported.

BUTTER AND CHEESE PRODUCED IN OHIO IN 1878.

Counties.	Butter.	Cheese.
	Pounds.	Pounds.
Adams	406,803	1,065
Allen	449,710	4,320
Ashland	734,838	473,932
Ashtabula	960,808	4,135,457
Athens	448,275	6,876
Auglaize	369,550	1,080
Belmont	739,334	610
Brown	475,700	360
Butler	487,045	3,370
Carroll	623,189	1,659
Champaign	394,618	105,376
Clarke	439,260	757
Clermont	563,929	150
Clinton	379,610	3,850
Columbiana	850,071	177,844
Coshocton	680,755	1,325
Crawford	609,354	2,831
Cuyahoga	845,698	1,295,661
Darke	791,741	490
Defiance	448,764	174,791
Delaware	629,539	2,245
Erie	393,434	134,950
Fairfield	629,924	540
Fayette	267,693	551
Franklin	552,726	215
Fulton	540,675	576,981
Gallia	431,795	4,980
Geauga	859,314	4,113,802
Greene	464,343	....
Guernsey	739,613	1,195
Hamilton	596,782	600
Hancock	656,484	1,700
Hardin	525,511	2,575
Harrison	584,155	6,050
Henry	364,840	172
Highland	500,700	1,203
Hocking	349,116	635
Holmes	528,064	99,109
Huron	992,534	1,456,144
Jackson	355,690	1,550
Jefferson	464,582	7,000
Knox	712,375	3,340
Lake	325,167	224,090
Lawrence	201,684	850
Licking	860,869	6,910
Logan	378,446	3,039
Lorain	957,910	5,012,928
Lucas	358,325	3,200
Madison	273,268	4,580
Mahoning	691,173	79,749
Marion	463,402	....
Medina	951,966	1,376,758
Meigs	561,261	13,969
Mercer	399,545	270
Miami	490,334	4,776
Monroe	483,617	392,403
Montgomery	528,907	112
Morgan	536,813	2,210
Morrow	690,707	1,250

BUTTER AND CHEESE PRODUCED IN OHIO IN 1878—Continued.

Counties.	Butter.	Cheese.
	Pounds.	Pounds.
Muskingum	902,252	....
Noble	495,672	4,721
Ottawa	208,845	400
Paulding	175,129	276
Perry	506,053	....
Pickaway	392,491	855
Pike	214,085	716
Portage	981,425	4,170,339
Preble	533,096	160
Putnam	400,630	501
Richland	827,305	9,728
Ross	303,060	23,210
Sandusky	549,422	1,800
Scioto	209,275	302
Seneca	764,491	170,000
Shelby	358,922	....
Stark	955,256	155,784
Summit	775,915	1,389,735
Trumbull	1,036,427	3,904,753
Tuscarawas	682,443	270,714
Union	576,181	9,650
Van Wert	398,814	2,712
Vinton	266,028	380
Warren	525,232	2,100
Washington	641,509	15,095
Wayne	1,032,988	31,785
Williams	665,700	167,147
Wood	704,371	360
Wyandot	430,973	33,678
Totals	50,332,023	36,401,386

TOBACCO PRODUCED IN 1878.

Counties.	Tobacco.	
	Acres planted.	Pounds produced.
Adams	400	289,381
Allen	17	1,243
Ashland	....	....
Ashtabula	4	7,625
Athens	134	129,035
Auglaize	15	5,335
Belmont	1,769	1,913,411
Brown	3,033	2,490,551
Butler	353	76,113
Carroll	....	....
Champaign	14	3,785
Clarke	65	72,038
Clermont	2,097	1,862,098
Clinton	19	16,127
Columbiana	1	225
Coshocton	2	2,190
Crawford	3	630
Cuyahoga	1	565
Darke	1,099	1,250,777
Defiance	81	66,805
Delaware	11	1,779
Erie	1	125
Fairfield	8	1,604
Fayette	3	615
Franklin	4	395
Fulton	....	....
Gallia	114	75,440
Geauga	7	1,193
Greene	419	568,557
Guernsey	951	798,828
Hamilton	3	680
Hancock	1	315
Hardin	2	1,650
Harrison	56	17,492
Henry	8	6,206
Highland	46	33,757
Hocking	15	11,050
Holmes	5	1,742
Huron	....	....
Jackson	4	1,410
Jefferson	2	400
Knox	8	3,393
Lake	22	16,400
Lawrence	125	91,790
Licking	2	1,970
Logan	5	3,475
Lorain	15	4,365
Lucas	2	965
Madison	2	2,168
Mahoning	1	40
Marion	1	75
Medina	29	36,510
Meigs	5	3,325
Mercer	7	3,035
Miami	329	333,769
Monroe	3,080	2,794,895
Montgomery	7,144	8,112,110
Morgan	831	711,833

TOBACCO PRODUCED IN 1878.—Continued.

Counties.	Tobacco.	
	Acres planted.	Pounds produced.
Morrow	2	325
Muskingum	8	3,215
Noble	2,469	2,500,750
Ottawa	3	100
Paulding	13	7,751
Perry	48	42,920
Pickaway	11	5,985
Pike	17	8,765
Portage	2	1,940
Preble	1,212	1,253,309
Putnam	8	1,575
Richland	1	400
Ross	11	3,991
Sandusky	1	6,600
Scioto	3	2,016
Seneca	1	1,111
Shelby	40	32,700
Stark	3	2,140
Summit	2	2,300
Trumbull	1	186
Tuscarawas	9	2,220
Union	2	1,280
Van Wert	7	2,295
Vinton	110	104,905
Warren	850	928,152
Washington	1,608	1,355,679
Wayne	69	63,515
Williams	1	430
Wood	1	45
Wyandot	3	2,210
Totals	28,899	28,075,140

SORGHUM, MAPLE SUGAR AND SIRUP, NUMBER OF HIVES OF BEES, AND AMOUNT OF HONEY PRODUCED IN OHIO IN 1878.

Counties.	Sorghum.			Maple sugar and sirup.		Bees and honey.	
	Acres planted.	Pounds sugar.	Gallons sirup.	Pounds sugar.	Gallons sirup.	Number hives.	Pounds honey.
Adams	297	171	15,621	5,885	4,381	1,734	23,897
Allen	159	36	9,843	3,751	2,864	1,668	18,566
Ashland	9	25	582	86,616	16,233	2,044	27,503
Ashtabula	1	....	93	505,242	13,374	617	10,624
Athens	155	639	11,797	2,509	1,537	1,690	35,923
Auglaize	419	70	21,768	3,955	1,895	1,124	16,255
Belmont	280	18	24,613	515	2,184	4,676	71,048
Brown	278	1	16,952	740	1,875	2,136	33,451
Butler	102	320	9,520	70	4,027	1,516	30,426
Carroll	59	....	3,313	954	584	2,294	30,957
Champaign	120	....	15,406	15,539	8,550	1,834	19,843
Clarke	145	....	12,790	60	261	1,722	19,542
Clermont	312	70	18,703	136	1,436	1,532	29,038
Clinton	201	66	23,062	20,137	9,736	1,604	21,947
Columbiana	59	25	3,508	24,494	15,808	3,246	36,531
Coshocton	186	1,397	11,292	1,637	926	4,114	49,791
Crawford	70	61	5,878	6,797	4,490	2,014	18,927
Cuyahoga	1	....	49	89,819	9,139	1,252	20,414
Darke	818	....	79,263	954	5,946	2,435	25,848
Defiance	243	28	24,583	3,553	1,366	1,977	34,389
Delaware	103	316	10,000	16,885	13,729	1,450	34,153
Erie	23	14	2,509	10,475	664	451	12,287
Fairfield	175	....	17,075	2,645	4,217	3,871	45,394
Fayette	42	268	5,583	165	484	2,048	24,019
Franklin	243	161	8,382	120	689	2,515	32,293
Fulton	124	61	11,019	466	216	2,117	37,618
Gallia	494	210	36,160	1,720	446	1,818	27,550
Geauga	....	....	....	581,789	9,026	744	13,480
Greene	120	....	10,655	15,096	8,227	2,091	26,159
Guernsey	406	63	28,576	266	605	3,355	53,838
Hamilton	35	331	2,347	....	555	1,207	27,164
Hancock	47	15	5,426	14,138	8,355	2,235	34,430
Hardin	127	....	8,531	6,172	2,542	2,681	37,231
Harrison	112	....	8,009	328	1,193	2,941	45,978
Henry	209	120	19,259	420	783	1,487	37,102
Highland	227	212	18,553	5,156	3,738	1,788	33,451
Hocking	274	20	20,658	704	779	1,201	18,499
Holmes	61	32	3,765	6,036	2,186	3,332	50,027
Huron	62	194	3,680	33,658	5,526	1,405	22,682
Jackson	398	....	29,685	590	143	970	14,534
Jefferson	100	....	5,639	235	1,901	2,265	25,678
Knox	75	851	4,361	29,216	11,155	2,989	42,897
Lake	....	....	....	78,163	3,599	704	18,339
Lawrence	540	1,675	60,198	200	199	1,169	18,692
Licking	159	246	20,546	9,021	13,511	3,382	49,931
Logan	102	....	9,484	214,347	24,062	2,398	21,781
Lorain	41	37	3,747	81,794	6,449	1,194	18,054
Lucas	34	8	2,644	235	19	1,400	31,547
Madison	377	292	6,494	300	50	2,407	36,085
Mahoning	21	110	1,324	101,307	36,602	1,756	21,220
Marion	60	13	5,217	1,851	1,256	1,978	30,465
Medina	11	....	773	186,575	20,087	1,075	23,320
Meigs	290	....	21,343	1,072	408	1,680	31,821
Mercer	387	....	36,295	1,189	300	846	14,259
Miami	387	678	34,714	2,090	6,634	1,360	15,230
Monroe	616	....	34,934	2,712	220	2,467	31,906

Sorghum, Maple Sugar and Sirup, etc.—Continued.

Counties.	Sorghum.			Maple sugar and sirup.		Bees and honey.	
	Acres planted.	Pounds sugar.	Gallons sirup.	Pounds sugar.	Gallons sirup.	Number hives.	Pounds honey.
Montgomery	235	....	31,335	7,937	7,582	1,341	16,618
Morgan	315	....	26,804	124	802	1,917	34,413
Morrow	28	745	2,237	37,847	14,256	1,324	20,732
Muskingum	276	20	23,696	88	518	3,667	52,697
Noble	376	16	28,495	520	123	1,826	41,197
Ottawa	67	....	4,395	120	39	605	18,051
Paulding	198	29	13,581	1,019	322	1,457	20,852
Perry	258	2	18,011	5,447	4,927	2,073	28,348
Pickaway	127	185	10,020	1,109	1,932	3,240	53,768
Pike	311	....	21,490	3,587	1,479	861	11,247
Portage	8	1,000	521	227,423	65,611	1,955	26,483
Preble	331	....	33,535	3,222	7,599	1,788	18,138
Putnam	210	73	17,420	2,586	1,366	1,387	27,449
Richland	31	156	4,632	38,589	17,417	2,137	23,918
Ross	194	30	16,698	1,605	4,053	1,952	29,154
Sandusky	117	50	10,187	1,625	1,167	748	10,638
Scioto	380	110	23,776	457	244	952	12,456
Seneca	84	....	6,206	12,970	5,462	2,410	23,232
Shelby	424	....	34,104	1,537	1,531	1,089	17,567
Stark	18	....	1,473	23,601	13,915	3,181	39,952
Summit	....	....	....	65,144	7,148	1,493	23,755
Trumbull	60	....	1,698	259,808	27,325	1,280	21,426
Tuscarawas	108	335	6,759	1,643	958	4,942	59,932
Union	217	....	12,795	51,146	7,529	1,235	17,272
Van Wert	307	25	27,601	1,074	275	2,021	27,394
Vinton	257	70	18,235	4,618	712	725	11,912
Warren	147	134	9,641	12,520	5,326	1,547	31,950
Washington	510	....	36,153	513	558	2,080	33,028
Wayne	10	....	1,268	24,804	6,117	2,858	34,451
Williams	72	75	5,313	14,642	3,290	1,577	29,693
Wood	210	....	17,168	2,094	1,468	1,969	26,523
Wyandot	23	....	2,175	1,460	1,899	2,112	42,993
Totals	16,305	11,909	1,273,048	2,987,288	510,117	169,755	2,541,293

Apples, Peaches, and Pears produced in 1878.

Counties.	Orchards.	Apples.	Peaches.	Pears.
	Number of acres.	Number of bushels.	Number of bushels.	Number of bushels
Adams	4,211	227,276	11,066	593
Allen	3,930	292,663	1,613	509
Ashland	5,007	613,304	23,914	1,135
Ashtabula	5,978	390,754	4,959	644
Athens	5,008	236,262	25,887	334
Auglaize	2,926	191,955	1,220	945
Belmont	9,933	446,955	24,743	1,765
Brown	4,400	322,894	793	369
Butler	3,843	123,901	3,624	2,324
Carroll	4,969	340,188	42,081	404
Champaign	2,980	265,662	7,629	1,583
Clarke	3,139	207,789	11,446	2,633
Clermont	8,979	403,408	8,161	5,521
Clinton	3,325	181,813	2,446	2,478
Columbiana	8,066	530,761	80,950	1,313
Coshocton	6,344	446,918	69,860	373
Crawford	4,877	627,530	4,053	695
Cuyahoga	5,914	505,044	3,485	1,251
Darke	6,117	216,229	1,831	1,903
Defiance	2,874	149,150	1,025	769
Delaware	4,123	394,838	8,566	600
Erie	3,596	459,158	16,944	447
Fairfield	5,312	309,590	21,362	1,390
Fayette	1,945	119,058	10,994	2,646
Franklin	4,480	368,953	2,923	1,286
Fulton	5,138	337,082	1,468	381
Gallia	4,918	191,728	7,292	147
Geauga	4,408	347,698	4,925	1,104
Greene	3,301	169,269	8,354	2,234
Guernsey	5,535	297,033	66,553	557
Hamilton	5,454	222,186	6,218	7,153
Hancock	5,964	674,364	6,567	1,395
Hardin	3,701	389,406	3,269	631
Harrison	3,934	261,142	36,375	564
Henry	3,073	188,595	814	334
Highland	5,152	331,235	14,131	1,603
Hocking	3,927	205,298	39,116	285
Holmes	5,182	668,374	50,569	1,321
Huron	6,565	747,700	17,545	894
Jackson	3,692	145,431	14,841	70
Jefferson	4,385	278,290	4,828	479
Knox	6,540	640,965	36,382	480
Lake	2,977	233,847	6,105	426
Lawrence	4,717	216,984	1,418	199
Licking	6,933	620,642	49,205	2,016
Logan	3,054	325,038	6,272	1,349
Lorain	5,984	514,371	9,828	1,135
Lucas	4,207	257,176	3,349	565
Madison	2,197	139,458	8,777	509
Mahoning	4,874	402,853	12,753	1,495
Marion	3,228	319,626	5,348	760
Medina	8,041	660,825	13,223	1,992
Meigs	5,367	226,849	11,507	178
Mercer	2,980	90,851	328	143
Miami	3,891	237,233	1,795	2,530
Monroe	6,085	460,083	12,173	561

APPLES, PEACHES, AND PEARS PRODUCED IN 1878.—Continued.

Counties.	Orchards.	Apples.	Peaches.	Pears.
	Number of acres.	Number of bushels.	Number of bushels.	Number of bushels
Montgomery	4,806	198,949	1,037	6,237
Morgan	5,171	25,065	48,889	938
Morrow	5,436	602,895	7,087	597
Muskingum	7,284	316,456	87,107	1,753
Noble	4,118	223,429	35,383	563
Ottawa	2,064	85,200	16,820	863
Paulding	1,378	32,828	387	102
Perry	4,243	294,207	28,673	1,493
Pickaway	2,871	146,986	6,814	635
Pike	3,491	145,015	31,844	345
Portage	6,504	622,413	16,136	1,021
Preble	3,744	149,786	1,068	3,660
Putnam	2,983	191,717	794	273
Richland	6,795	961,853	21,416	1,967
Ross	4,872	215,227	48,067	887
Sandusky	5,027	556,717	18,301	770
Scioto	2,891	90,098	5,790	206
Seneca	6,950	798,257	9,587	1,741
Shelby	2,938	148,536	985	442
Stark	6,971	871,350	37,043	4,238
Summit	4,706	574,007	11,385	1,738
Trumbull	6,845	405,232	3,913	385
Tuscarawas	6,851	571,826	60,594	457
Union	3,371	342,208	4,942	435
Van Wert	2,903	121,707	465	410
Vinton	2,385	116,481	18,654	143
Warren	5,116	144,069	1,891	4,538
Washington	9,741	473,415	45,392	481
Wayne	6,864	969,483	38,640	3,292
Williams	4,735	247,974	976	565
Wood	5,917	389,306	6,026	940
Wyandot	3,836	459,023	7,551	904
Totals	421,349	30,669,404	1,476,159	110,419

Grapes and Wine produced in Ohio in 1878.

Counties.	Grapes and wine.				
	Acres planted in the year 1878.	Whole number of acres in vineyard in 1878.†	Pounds of grapes gathered in 1878.	Gallons of wine pressed in 1878.	Total acreage reported in 1877.*†
Adams	6	6	2,000	350	14
Allen	....	....	560	34	17
Ashland	13	49	30,805	198	99
Ashtabula	18	53	106,565	160	35
Athens	....	26	19,155	335	9
Auglaize	¼	50	....	....	......
Belmont	11	156	219,518	5,292	109
Brown	3	187	17,890	15,207	217
Butler	21	48	57,950	6,001	34
Carroll	7-12	9	5,065	80	7
Champaign	....	....	....	....	......
Clarke	....	....	1,850	2	5
Clermont	91	307	268,997	13,976	456
Clinton	....	2	5,140	41	4
Columbiana	14	80	36,120	718	184
Coshocton	13	7	9,148	177	25
Crawford	6	2	3,791	68	25
Cuyahoga	115	999	1,525,100	17,447	630
Darke	½	2	200	....	2
Defiance	¼	....	150	2	2
Delaware	....	3	5,095	35	4
Erie	23	1,271	1,924,275	151,133	1,374
Fairfield	13	142	120,085	3,188	280
Fayette	....	307	8,925	208	5
Franklin	126	63	22,576	125	30
Fulton	....	2	2,080	....	2
Gallia	26	27	3,370	128	35
Geauga	2	12	21,325	130	14
Greene	2	....	850	2	......
Guernsey	5	26	21,044	178	36
Hamilton	43	397	472,252	17,478	807
Hancock	2	7	4,320	16	6
Hardin	2	2	4,196	3	1
Harrison	⅛	3	1,250	....	8
Henry	....	....	....	....	......
Highland	....	5	1,900	120	5
Hocking	11	40	31,675	1,015	47
Holmes	3	25	12,175	351	46
Huron	8	33	39,700	244	30
Jackson	⅞	5	6,935	120	6
Jefferson	11	15	23,130	1,695	36
Knox	7	37	35,659	12	19
Lake	30	87	65,200	110	68
Lawrence	20	....	450	2	1
Licking	2	15	37,670	10	8
Logan	1	....	4,620	60	2
Lorain	27	446	428,670	1,853	465
Lucas	143	157	532,290	9,533	118
Madison	....	3	3,692	50	5
Mahoning	8	35	27,349	166	60
Marion	....	1	6,420	60	8
Medina	....	....	2,320	....	33

GRAPES AND WINE PRODUCED IN OHIO—Continued.

Counties.	Grapes and wine.				
	Acres planted in the year 1878.	Whole number of acres in vineyard in 1878.†	Pounds of grapes gathered in 1878.	Gallons of wine pressed in 1878.	Total acreage reported in 1877.*†
Meigs	2	20	24,340	91	27
Mercer	....	4	345	222	1
Miami	....	7	615	5	8
Monroe	2	40	31,450	4,319	40
Montgomery	10	36	39,895	4,004	30
Morgan	1	76	24,572	1,294	30
Morrow	1	5	2,700	....	5
Muskingum	2	50	56,105	3,081	52
Noble	2	5	6,724	440	8
Ottawa	16	1,900	3,448,103	318,807	1,862
Paulding	....	....	176	50	......
Perry	7	150	189,471	2,592	128
Pickaway	3	14	10,150	465	10
Pike	11	24	7,290	783	16
Portage	30	32	17,725	999	52
Preble	⅛	....	6,600	530	1
Putnam	¾	1	689	....	15
Richland	25	284	190,005	245	167
Ross	15	121	62,080	4,494	172
Sandusky	7	16	25,860	2,928	36
Scioto	....	8	4,430	368	10
Seneca	....	16	21,941	1,077	8
Shelby	....	....	....	....	......
Stark	7	35	41,630	308	80
Summit	5	516	22,995	225	31
Trumbull	10	46	14,708	8	23
Tuscarawas	4	25	3,632	265	27
Union	....	12	8,690	269	8
Van Wert	6	35	550	....	2
Vinton	....	75	11,955	90	36
Warren	1	6	13,934	466	8
Washington	5	103	141,875	10,949	77
Wayne	58	15	48,918	1,279	33
Williams	¼	2	2,510	27	10
Wood	9	25	88,250	40	13
Wyandot	4	13	8,500	44	101
Totals	1,096⅝	8,866	10,341,715	708,733	8,560

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* The assessors' reports of "acres in vineyard" are so inaccurate as to be comparatively valueless.

† Fractions omitted.

WOOL PRODUCED AND SHEEP KILLED AND INJURED BY DOGS IN OHIO IN 1878.

Counties.	Wool.	Sheep killed by dogs.		Sheep injured by dogs.		Aggregate am't of injury to sheep by dogs.
	Pounds shorn.	No.	Value.	No.	Value.	
Adams	34,950	168	$405 00	80	$194 00	$599 00
Allen	130,115	214	656 00	128	224 00	880 00
Ashland	241,613	297	776 00	312	599 00	1,375 00
Ashtabula	99,185	167	655 00	84	149 00	804 00
Athens	261,059	297	833 00	97	163 00	996 00
Auglaize	41,620	231	541 00	73	105 00	646 00
Belmont	580,192	510	1,597 00	349	610 00	2,207 00
Brown	45,497	201	578 00	177	181 00	759 00
Butler	36,204	382	514 00	456	446 00	960 00
Carroll	537,058	363	1,055 00	231	458 00	1,513 00
Champaign	107,084	175	616 00	233	393 00	1,009 00
Clarke	180,262	214	760 00	403	535 00	1,295 00
Clermont	23,697	158	578 00	104	280 00	858 00
Clinton	88,447	264	713 00	241	331 00	1,044 00
Columbiana	528,303	472	1,639 00	394	851 00	2,490 00
Coshocton	490,076	244	744 00	220	284 00	1,028 00
Crawford	200,568	187	519 00	202	351 00	870 00
Cuyahoga	77,049	294	1,185 00	52	114 00	1,299 00
Darke	22,180	191	598 00	116	158 00	756 00
Defiance	36,856	201	169 00	91	97 00	266 00
Delaware	437,901	355	1,033 00	1,671	1,395 00	2,428 00
Erie	100,881	135	520 00	66	106 00	626 60
Fairfield	98,469	362	1,138 00	279	349 00	1,487 00
Fayette	77,514	392	785 00	151	243 00	1,028 00
Franklin	99,510	390	1,108 00	175	358 00	1,466 00
Fulton	115,249	181	418 00	73	111 00	529 00
Gallia	32,042	186	447 00	49	49 00	496 00
Geauga	82,245	125	522 00	64	124 00	646 00
Greene	90,074	451	1,511 00	310	740 00	2,251 00
Guernsey	652,419	314	1,680 00	173	643 00	2,323 00
Hamilton	11,896	176	663 00	146	314 00	977 00
Hancock	119,675	577	1,780 00	467	682 00	2,462 00
Hardin	132,657	396	9-1 00	315	435 00	1,416 00
Harrison	746,801	320	1,082 00	319	637 00	1,719 00
Henry	27,774	143	323 00	52	43 00	366 00
Highland	60,081	227	868 00	102	130 00	998 00
Hocking	119,056	192	525 00	140	195 00	720 00
Holmes	158,611	227	632 00	233	449 00	1,081 00
Huron	259,237	173	590 00	167	259 00	849 00
Jackson	28,810	130	267 00	36	73 00	340 00
Jefferson	558,893	277	779 00	60	140 00	919 00
Knox	637,917	428	1,175 00	396	755 00	1,930 00
Lake	62,224	140	405 00	39	81 00	486 00
Lawrence	8,456	124	240 00	19	31 00	271 00
Licking	907,184	522	1,459 00	479	952 00	2,411 00
Logan	203,319	355	956 00	390	761 00	1,717 00
Lorain	192,401	335	999 00	74	187 00	1,186 00
Lucas	21,206	338	860 00	144	264 00	1,124 00
Madison	233,221	406	1,315 00	2,235	457 00	1,772 00
Mahoning	302,919	362	1,292 00	844	857 00	2,149 00
Marion	287,329	248	695 00	117	153 00	848 00
Medina	239,886	228	622 00	332	232 00	854 00
Meigs	134,671	191	504 00	140	197 00	701 00
Mercer	36,982	219	514 00	55	75 00	589 00
Miami	32,889	331	1,027 00	396	1,093 00	2,120 00
Monroe	90,382	234	800 00	129	216 00	1,016 00

WOOL PRODUCED AND SHEEP KILLED AND INJURED BY DOGS IN 1878—Continued.

Counties.	Wool.	Sheep killed by dogs.		Sheep injured by dogs.		Aggregate am't of injury to sheep by dogs.
	Pounds shorn.	No.	Value.	No.	Value.	
Montgomery	13,789	155	$350 00	52	$77 00	$127 00
Morgan	322,688	214	606 00	190	284 00	890 00
Morrow	467,793	230	785 00	134	245 00	1,030 00
Muskingum	582,909	604	1,804 00	828	1,010 00	2,814 00
Noble	294,258	162	516 00	169	208 00	724 00
Ottawa	52,487	227	537 00	71	106 00	643 00
Paulding	8,335	78	168 00	45	38 00	206 00
Perry	294,780	232	680 00	107	262 00	942 00
Pickaway	55,260	397	1,042 00	254	318 00	1,360 00
Pike	23,562	146	315 00	47	66 00	381 00
Portage	182,287	126	466 00	110	307 00	773 00
Preble	46,393	325	969 00	131	230 00	1,199 00
Putnam	37,002	300	681 00	115	138 00	819 00
Richland	227,154	285	788 00	168	301 00	1,089 00
Ross	36,130	225	585 00	91	129 00	714 00
Sandusky	87,069	391	1,040 00	515	576 00	1,616 00
Scioto	11,281	190	376 00	49	104 00	480 00
Seneca	240,488	540	1,428 00	308	721 00	2,149 00
Shelby	64,000	233	893 00	59	198 00	1,091 00
Stark	206,625	422	1,186 00	319	763 00	1,949 00
Summit	75,168	143	637 00	98	274 00	911 00
Trumbull	184,684	234	873 00	470	723 00	1,596 00
Tuscarawas	363,747	492	1,565 00	247	392 00	1,957 00
Union	359,768	284	789 00	111	202 00	991 00
Van Wert	28,550	176	347 00	53	64 00	411 00
Vinton	95,959	229	710 00	124	212 00	922 00
Warren	58,851	516	1,325 00	144	278 00	1,603 00
Washington	223,810	330	916 00	185	298 00	1,214 00
Wayne	162,481	573	1,668 00	283	437 00	2,105 00
Williams	83,283	186	502 00	206	451 00	953 00
Wood	74,107	296	771 00	138	225 00	996 00
Wyandot	258,601	303	957 00	246	577 00	1,534 00
Totals	16,390,505	24,684	$71,921 00	22,942	$30,523 00	$102,444 00

DOMESTIC ANIMALS DIED FROM DISEASE IN OHIO IN 1878.

Counties.	Hogs.		Sheep.	
	Number.	Value.	Number.	Value.
Adams	3,123	$6,420	280	$769
Allen	3,311	8,197	527	1,262
Ashland	316	1,142	353	1,163
Ashtabula	255	1,292	840	2,777
Athens	365	1,208	740	1,902
Auglaize	6,864	18,260	316	670
Belmont	348	1,184	1,337	2,971
Brown	3,233	9,322	407	1,082
Butler	15,161	55,023	333	1,370
Carroll	37	175	992	2,160
Champaign	2,047	6,996	511	1,516
Clarke	3,218	9,651	753	2,119
Clermont	2,299	8,232	404	922
Clinton	8,084	20,951	588	1,386
Columbiana	185	863	960	2,464
Coshocton	1,169	3,102	1,477	3,850
Crawford	3,618	9,272	531	1,055
Cuyahoga	157	942	371	1,066
Darke	7,787	21,353	262	647
Defiance	2,569	7,898	320	592
Delaware	580	1,937	2,330	4,504
Erie	358	1,177	206	433
Fairfield	4,143	12,475	548	1,432
Fayette	8,141	24,914	304	759
Franklin	7,684	27,642	1,104	3,051
Fulton	704	2,570	370	699
Gallia	891	2,544	324	741
Geauga	128	652	568	1,798
Greene	5,246	14,328	371	1,267
Guernsey	166	554	2,067	4,947
Hamilton	4,000	14,375	151	403
Hancock	4,319	10,739	758	2,131
Hardin	4,571	14,800	936	1,912
Harrison	56	317	932	2,283
Henry	2,912	7,308	219	493
Highland	8,916	25,193	597	1,482
Hocking	586	1,705	580	1,238
Holmes	670	1,836	560	1,425
Huron	489	2,451	647	1,517
Jackson	333	876	212	388
Jefferson	114	554	1,253	2,288
Knox	1,641	4,898	2,603	4,853
Lake	44	210	184	533
Lawrence	779	2,197	179	328
Licking	1,307	4,245	3,587	8,666
Logan	1,948	5,906	890	1,922
Lorain	199	877	720	2,266
Lucas	2,873	7,899	330	524
Madison	4,902	15,294	1,216	2,824
Mahoning	151	750	1,243	3,229
Marion	3,339	11,495	914	2,159
Medina	306	1,244	1,069	2,624
Meigs	277	947	432	996
Mercer	6,302	13,767	160	338
Miami	3,442	13,340	329	1,035
Monroe	383	1,117	493	1,039
Montgomery	3,385	10,744	146	408
Morgan	213	807	1,085	2,371
Morrow	237	780	1,147	3,288
Muskingum	904	3,209	1,771	3,837

DOMESTIC ANIMALS DIED FROM DISEASE IN OHIO IN 1878—Continued.

Counties.	Hogs.		Sheep.	
	Number.	Value.	Number.	Value.
Noble	198	$656	811	$1,683
Ottawa	728	1,586	566	969
Paulding	4,317	8,258	235	556
Perry	377	1,275	1,492	2,904
Pickaway	6,631	19,331	305	742
Pike	1,949	4,601	330	652
Portage	150	781	1,041	3,188
Preble	10,732	26,452	333	1,043
Putnam	5,726	12,292	361	793
Richland	888	2,255	1,096	2,494
Ross	6,225	16,159	174	339
Sandusky	758	2,327	326	752
Scioto	1,080	2,498	192	372
Seneca	2,136	6,314	663	1,194
Shelby	4,142	12,005	158	521
Stark	514	1,508	1,213	2,937
Summit	185	889	333	1,080
Trumbull	196	1,041	1,315	4,206
Tuscarawas	375	1,369	1,226	2,825
Union	3,020	9,335	1,549	3,575
Van Wert	3,465	7,493	306	634
Vinton	431	898	347	793
Warren	10,037	39,802	765	2,329
Washington	266	1,088	468	1,153
Wayne	599	1,972	713	1,989
Williams	1,373	4,292	361	841
Wood	3,225	9,051	403	1,017
Wyandot	1,507	4,770	783	1,681
Totals	223,015	$661,454	63,702	$153,485

DOMESTIC ANIMALS DIED FROM DISEASE IN OHIO IN 1878.

Counties.	Cattle.		Horses.	
	Number.	Value.	Number.	Value.
Adams	225	$4,244	97	$4,173
Allen	294	5,938	132	7,575
Ashland	205	4,220	86	6,180
Ashtabula	444	9,035	145	8,060
Athens	113	2,039	41	2,070
Auglaize	217	3,687	143	6,136
Belmont	231	5,125	109	7,615
Brown	254	4,666	167	9,005
Butler	395	8,548	285	17,917
Carroll	123	2,611	54	4,315
Champaign	185	4,627	133	9,685
Clarke	185	4,851	183	14,640
Clermont	213	4,241	191	7,075
Clinton	227	5,533	167	10,380
Columbiana	233	4,465	85	5,071
Coshocton	208	3,842	104	2,930
Crawford	183	3,355	106	7,903
Cuyahoga	201	6,083	89	4,525
Darke	461	6,702	267	15,463
Defiance	296	3,986	154	7,249
Delaware	192	5,304	143	8,911
Erie	56	1,524	40	2,955
Fairfield	220	4,799	104	6,511
Fayette	119	3,950	121	6,410
Franklin	233	5,386	125	8,210
Fulton	159	2,482	94	5,890
Gallia	230	3,216	103	5,308
Geauga	233	5,199	85	5,060
Greene	211	5,353	158	12,010
Guernsey	183	2,919	78	4,325
Hamilton	271	6,982	193	10,802
Hancock	297	5,223	162	9,453
Hardin	225	4,528	145	8,010
Harrison	129	3,479	48	2,925
Henry	194	3,126	103	5,952
Highland	221	5,253	150	7,420
Hocking	109	1,766	54	1,920
Holmes	173	2,401	94	5,051
Huron	261	6,539	131	10,320
Jackson	172	2,385	60	2,025
Jefferson	92	2,259	62	4,145
Knox	261	5,120	136	7,991
Lake	72	1,498	31	1,930
Lawrence	274	4,128	86	4,355
Licking	292	6,290	152	9,569
Logan	189	3,659	118	7,179
Lorain	314	8,222	103	7,240
Lucas	135	2,469	124	4,746
Madison	298	4,721	189	9,627
Mahoning	151	3,955	65	4,242
Marion	141	3,297	121	8,675
Medina	285	6,553	99	6,717
Meigs	141	2,493	68	3,210
Mercer	322	3,912	149	7,937
Miami	269	5,164	169	12,539
Monroe	222	3,202	76	3,029
Montgomery	302	6,942	185	12,584
Morgan	234	4,448	79	3,569
Morrow	143	2,731	69	3,837

Domestic Animals Died from Diseases in Ohio in 1878—Continued.

Counties.	Cattle.		Horses.	
	Number.	Value.	Number.	Value.
Muskingum	230	$4,794	133	$5,933
Noble	158	2,323	47	2,377
Ottawa	203	2,726	110	5,636
Paulding	345	4,396	231	11,107
Perry	187	3,222	87	4,750
Pickaway	188	4,936	212	13,965
Pike	120	2,442	149	5,831
Portage	297	7,338	91	5,387
Preble	292	6,306	158	10,815
Putnam	293	4,800	198	9,147
Richland	241	4,589	413	725
Ross	216	4,276	101	4,825
Sandusky	206	3,721	141	8,770
Scioto	204	2,738	106	5,052
Seneca	206	3,955	186	10,607
Shelby	178	3,316	142	7,507
Stark	360	6,179	179	10,497
Summit	259	6,235	78	5,495
Trumbull	472	10,004	105	4,903
Tuscarawas	296	4,967	113	6,827
Union	172	4,038	184	13,982
Van Wert	220	3,188	156	8,654
Vinton	104	2,052	48	2,499
Warren	263	7,313	177	12,143
Washington	232	4,146	121	6,072
Wayne	371	5,978	177	11,631
Williams	166	2,872	87	4,965
Wood	261	5,076	176	10,529
Wyandot	142	2,925	163	9,548
Totals	14,795	363,172	11,109	630,735

TAXABLE LANDS IN OHIO AS REPORTED TO COUNTY AUDITORS BY TOWNSHIP ASSESSORS, IN MAY, 1878.

Counties.	Cultivated.	Pasture.	Wood.	Unculti-vated or waste lands.	Total number of acres.
	No. acres.	No. acres.	No. acres.	No. acres.	
Adams	93,837	72,466	80,716	6,721	253,740
Allen	101,094	20,468	69,299	2,001	192,862
Ashland	116,691	59,869	56,413	2,942	235,915
Ashtabula	105,543	159,464	70,217	3,844	339,068
Athens	64,994	95,527	70,267	4,609	235,397
Auglaize	110,450	19,342	65,515	1,813	197,120
Belmont	91,876	120,375	69,621	12,990	294,862
Brown	122,856	69,838	58,847	12,399	263,940
Butler	134,438	24,461	36,739	9,410	205,048
Carroll	64,631	91,073	54,483	1,350	211,537
Champaign	119,599	34,973	46,447	1,486	202,505
Clarke	109,859	41,290	35,590	3,152	189,891
Clermont	117,382	44,168	42,542	10,499	214,591
Clinton	114,469	47,158	42,263	4,216	208,106
Columbiana	113,340	91,178	58,802	4,902	268,222
Coshocton	99,833	123,457	75,716	3,353	302,359
Crawford	119,284	37,612	56,168	1,855	214,919
Cuyahoga	70,388	76,695	27,560	3,778	178,421
Darke	189,199	22,053	99,993	10,839	322,084
Defiance	89,290	12,459	78,398	1,691	181,838
Delaware	92,536	84,426	55,662	2,141	234,765
Erie	81,539	20,944	15,409	3,150	121,042
Fairfield	133,331	78,847	52,307	5,712	270,197
Fayette	97,252	68,794	33,237	1,992	201,275
Franklin	126,106	50,394	35,365	5,311	217,176
Fulton	102,429	20,289	59,470	5,891	188,079
Gallia	72,220	80,096	64,242	5,640	222,198
Geauga	59,548	115,589	43,800	2,197	221,134
Greene	125,392	35,751	42,569	5,915	209,627
Guernsey	71,197	133,437	66,475	2,245	273,354
Hamilton	83,742	19,225	22,872	5,199	131,038
Hancock	145,861	45,907	95,021	2,567	289,356
Hardin	103,623	31,838	70,073	3,608	209,142
Harrison	42,621	122,553	43,286	1,402	209,862
Henry	76,583	2,733	53,278	9,033	141,627
Highland	120,336	100,987	69,164	3,607	294,094
Hocking	45,444	83,224	75,781	3,484	207,933
Holmes	114,545	59,335	62,488	1,816	238,184
Huron	130,613	88,109	52,985	3,773	275,480
Jackson	56,335	89,930	55,060	15,550	216,875
Jefferson	83,231	81,771	54,442	1,980	221,424
Knox	113,984	150,992	54,288	5,138	324,402
Lake	41,692	34,498	19,071	2,336	97,597
Lawrence	53,986	30,233	57,803	11,599	153,621
Licking	113,803	178,438	74,969	3,466	370,676
Logan	105,531	43,204	59,322	3,020	211,077
Lorain	92,600	110,983	47,006	12,156	262,745
Lucas	64,444	8,721	31,426	3,982	108,573
Madison	89,559	106,898	24,574	2,312	223,343
Mahoning	83,116	104,709	75,666	3,084	266,575
Marion	101,968	55,485	43,980	1,894	203,327
Medina	73,728	80,800	39,061	464	194,053
Meigs	69,149	73,649	67,768	3,304	213,870
Mercer	117,856	15,143	100,705	19,907	253,611
Miami	143,911	12,520	41,151	3,301	200,883
Monroe	73,292	95,391	75,669	5,252	249,604

TAXABLE LANDS IN OHIO—Continued.

Counties.	Cultivated.	Pasture.	Wood.	Uncultivated or waste lands.	Total number of acres.
	No. acres.	No. acres.	No. acres.	No. acres.	
Montgomery	156,275	19,931	44,907	5,548	226,661
Morgan	59,580	100,885	56,093	1,748	218,306
Morrow	83,688	79,457	53,558	1,090	217,793
Muskingum	118,492	217,430	79,067	4,137	419,126
Noble	63,424	98,907	48,576	1,258	212,165
Ottawa	37,075	12,398	25,136	7,185	81,794
Paulding	35,367	1,364	44,271	1,010	82,012
Perry	63,412	104,798	45,793	19,925	233,928
Pickaway	131,508	65,937	44,376	8,009	249,830
Pike	64,671	45,013	80,561	8,328	198,573
Portage	89,574	123,079	55,499	6,157	274,309
Preble	133,373	33,293	58,673	6,591	231,930
Putnam	102,392	10,765	81,924	3,554	198,635
Richland	148,852	41,469	68,261	3,849	262,431
Ross	131,157	96,430	86,101	16,825	330,513
Sandusky	130,617	11,387	49,517	5,223	196,744
Scioto	58,582	24,095	73,408	12,423	168,508
Seneca	187,664	34,881	75,193	3,107	300,845
Shelby	121,133	13,527	63,440	4,216	202,316
Stark	183,978	57,612	51,586	8,264	301,440
Summit	94,428	70,163	32,795	7,696	205,082
Trumbull	99,166	146,648	65,898	1,915	313,627
Tuscarawas	116,877	115,333	66,750	9,094	308,054
Union	105,118	72,865	50,843	1,397	230,223
Van Wert	83,530	6,249	82,453	5,429	177,661
Vinton	36,060	75,494	67,299	7,663	186,516
Warren	116,869	32,433	38,866	7,782	195,950
Washington	105,738	108,070	102,258	8,502	324,568
Wayne	161,989	57,083	64,244	4,505	287,821
Williams	104,000	27,904	70,279	6,310	208,493
Wood	139,538	16,597	85,520	3,485	245,140
Wyandot	123,949	57,179	57,256	3,534	241,917
Totals	8,840,232	5,758,445	5,101,441	473,037	20,173,155

NUMBER AND VALUE OF HORSES, CATTLE, MULES, SHEEP AND HOGS IN OHIO IN 1879.

Counties.	Horses.		Cattle.		Mules, etc.		Sheep.		Hogs.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Adams	5,891	$225,128	10,999	$179,019	315	$14,972	11,952	$25,319	19,555	$34,636
Allen	8,770	362,540	16,873	179,002	186	6,855	24,846	36,598	31,738	48,517
Ashland	8,182	407,167	21,794	304,694	66	3,754	51,404	100,081	23,501	49,835
Ashtabula	9,011	409,766	35,490	469,303	79	3,435	27,729	58,441	6,042	14,133
Athens	5,205	222,287	14,331	204,506	238	10,488	67,514	161,250	11,185	24,873
Auglaize	8,157	316,357	14,783	154,548	314	13,045	14,405	26,650	24,714	42,525
Belmont	9,888	480,029	23,802	353,208	453	23,422	141,643	331,241	23,902	60,084
Brown	8,325	356,130	15,052	215,807	401	26,202	14,936	30,993	32,402	64,401
Butler	11,482	645,492	16,882	328,085	797	51,714	10,186	34,115	46,079	157,388
Carroll	4,927	203,762	15,824	170,090	141	6,350	138,290	232,942	9,953	17,010
Champaign	10,405	623,904	17,695	375,988	294	19,945	31,778	88,056	35,725	121,720
Clarke	9,887	596,074	17,624	392,088	484	34,288	48,090	139,537	29,853	101,578
Clermont	8,678	377,111	13,442	205,428	1,049	57,174	10,007	22,759	30,034	69,760
Clinton	9,857	468,661	16,552	361,864	481	27,722	28,121	69,705	47,867	131,934
Columbiana	9,313	458,954	21,665	367,965	211	8,544	132,249	294,338	14,529	32,224
Coshocton	7,607	382,836	21,737	299,141	237	11,610	126,155	264,474	23,265	48,612
Crawford	9,027	438,760	22,149	284,557	152	8,035	56,434	123,504	32,494	74,215
Cuyahoga	15,713	746,647	22,611	377,625	286	12,130	20,387	47,437	6,121	17,883
Darke	13,584	728,002	23,155	300,316	512	33,598	8,675	19,963	44,670	104,995
Defiance	5,793	216,939	12,427	130,182	137	4,880	12,083	19,941	15,026	22,972
Delaware	8,210	469,868	19,956	388,317	151	6,883	107,784	234,571	27,999	72,028
Erie	6,021	263,619	9,269	128,888	59	2,125	24,789	37,508	9,527	17,435
Fairfield	9,853	524,835	23,693	433,487	168	9,595	28,892	62,162	42,962	125,378
Fayette	8,841	420,534	15,916	384,106	656	31,990	20,986	58,835	48,624	143,849
Franklin	15,546	786,604	23,462	486,657	371	21,197	34,367	91,444	48,000	132,501
Fulton	6,454	249,187	14,536	154,837	111	4,650	29,848	37,682	19,728	33,352
Gallia	5,624	237,581	14,782	172,900	499	26,342	13,396	27,124	14,667	24,539
Geauga	5,419	236,570	24,812	387,018	52	2,475	23,254	65,057	3,246	8,132
Greene	11,314	610,423	17,690	363,040	409	26,670	22,960	59,465	46,654	141,449
Guernsey	6,228	230,489	17,860	200,244	139	4,970	172,819	328,543	11,590	24,103
Hamilton	19,123	962,626	23,655	522,453	2,051	114,857	7,535	18,234	28,366	80,806
Hancock	10,672	428,539	22,607	270,161	211	10,282	38,785	74,039	41,707	70,773
Hardin	8,017	273,073	16,594	189,083	262	9,320	36,965	72,071	26,341	43,681

NUMBER AND VALUE OF HORSES, CATTLE, MULES, SHEEP AND HOGS IN OHIO IN 1879—Continued.

Counties.	Horses.		Cattle.		Mules, etc.		Sheep.		Hogs.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Harrison	4,855	$256,662	13,197	$219,172	96	$4,820	194,389	$468,350	9,273	$24,303
Henry	5,542	181,715	10,771	86,304	114	3,656	9,740	10,712	14,304	21,714
Highland	9,765	422,068	21,384	399,209	513	27,130	21,728	49,971	48,254	113,057
Hocking	4,321	179,125	11,228	150,800	214	10,544	32,801	64,710	11,026	22,088
Holmes	6,053	265,220	16,843	203,379	92	3,610	42,649	103,632	25,747	39,799
Huron	9,283	412,587	23,140	335,681	104	4,483	63,198	97,436	17,426	39,065
Jackson	4,157	150,599	16,149	196,346	482	22,988	10,333	12,858	10,800	16,128
Jefferson	5,596	289,916	14,798	214,196	137	7,090	130,124	262,920	11,009	25,636
Knox	8,986	420,636	21,361	269,137	153	7,401	140,113	227,129	28,370	51,472
Lake	4,090	211,818	10,103	171,051	52	2,390	17,874	45,985	2,653	9,017
Lawrence	4,472	205,084	12,196	163,164	921	56,858	6,641	10,537	14,145	25,764
Licking	11,733	638,883	27,994	565,677	180	10,290	219,885	536,991	33,989	96,181
Logan	9,308	441,784	17,759	301,331	350	18,800	60,445	129,403	30,545	80,092
Lorain	9,968	435,375	30,155	444,404	104	4,526	46,091	101,161	11,132	25,524
Lucas	6,458	246,189	9,317	109,650	171	6,500	8,346	8,812	8,670	9,812
Madison	8,040	390,213	20,922	541,642	506	23,535	64,166	162,742	33,545	92,767
Mahoning	7,112	358,343	20,091	346,245	169	8,065	76,706	188,188	8,422	26,305
Marion	7,994	415,544	17,889	328,145	189	10,032	72,396	163,384	27,256	72,303
Medina	7,561	341,615	23,262	329,630	60	2,693	57,647	117,985	9,848	30,702
Meigs	5,200	225,452	14,714	195,465	513	24,712	28,840	64,098	10,978	18,946
Mercer	7,447	274,896	14,833	142,190	205	7,539	11,599	17,858	28,079	42,439
Miami	10,818	669,134	15,865	275,418	412	29,265	10,529	30,837	25,915	81,952
Monroe	5,656	201,736	17,666	185,916	374	12,600	29,413	58,797	13,238	23,684
Montgomery	13,878	809,226	19,689	302,800	398	22,220	4,628	12,266	34,991	96,135
Morgan	5,893	293,762	16,001	248,080	161	8,345	81,302	212,135	12,008	35,601
Morrow	7,330	404,455	17,873	283,410	104	5,861	116,974	260,101	17,142	45,628
Muskingum	10,979	517,797	33,046	490,512	290	14,964	151,558	352,733	24,200	71,324
Noble	5,153	211,372	16,844	203,854	160	6,500	64,081	140,345	14,550	32,677
Ottawa	5,032	216,208	8,555	96,504	48	2,063	14,933	22,801	11,309	18,360
Paulding	3,419	118,710	7,437	72,452	118	4,072	3,946	4,489	5,583	6,756
Perry	5,366	246,758	15,822	229,928	211	10,969	69,747	147,764	13,042	33,044
Pickaway	10,395	519,708	20,144	419,297	475	25,466	18,518	39,781	42,676	112,165
Pike	4,854	217,480	9,008	149,903	470	25,875	8,269	18,314	17,185	39,118

Portage	7,882	409,873	29,740	525,079	64	3,115	46,952	138,576	7,199	23,019
Preble	9,414	566,717	16,695	280,190	361	24,735	11,508	33,820	39,891	110,488
Putnam	7,122	266,923	15,814	160,505	258	10,898	12,584	18,762	28,119	52,383
Richland	10,329	526,732	23,075	306,521	245	12,210	63,310	147,801	31,751	65,503
Ross	11,431	567,801	21,799	468,185	618	36,577	12,379	29,514	47,048	139,259
Sandusky	9,299	364,445	15,878	170,922	171	7,520	26,701	38,237	23,623	35,271
Scioto	4,787	221,577	12,231	165,964	865	47,243	5,455	10,031	12,283	28,815
Seneca	11,051	469,211	20,390	202,621	159	6,423	60,321	69,792	32,972	56,066
Shelby	8,134	433,513	13,119	191,085	199	11,614	15,848	29,978	24,207	62,278
Stark	12,909	700,532	31,930	429,194	286	15,210	56,674	129,804	29,736	66,699
Summit	8,552	469,010	24,348	364,184	179	8,750	24,965	58,817	11,577	32,220
Trumbull	9,115	388,951	39,067	645,111	238	10,015	57,173	150,073	7,112	15,538
Tuscarawas	8,555	348,963	26,905	290,828	210	8,740	97,223	203,419	20,774	41,831
Union	8,461	505,470	15,308	318,199	180	11,180	78,208	204,885	27,803	72,690
Van Wert	6,896	240,680	14,000	143,169	294	11,890	9,694	15,863	23,512	32,955
Vinton	3,218	127,615	9,953	137,557	306	13,707	25,420	57,825	6,969	12,965
Warren	10,120	551,520	14,308	298,939	513	32,839	19,943	57,266	38,684	130,603
Washington	8,263	362,069	21,436	294,018	297	15,982	57,359	157,567	14,054	35,963
Wayne	11,186	615,719	28,637	418,664	231	13,110	42,980	103,165	32,102	78,905
Williams	7,548	292,235	16,081	172,691	150	5,645	25,604	49,413	22,481	36,164
Wood	10,589	381,382	17,782	164,161	275	10,847	20,638	29,996	30,436	43,335
Wyandot	7,843	343,908	15,733	212,641	176	7,380	67,149	132,061	24,787	48,616
Totals	730,642	34,705,410	1,630,004	24,765,607	26,793	1,351,001	4,267,261	9,311,972	2,041,649	4,849,445

LAWS RELATING TO AGRICULTURE.

AN ACT

For the encouragement of agriculture.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That whenever thirty or more persons, residents of any county, or district embracing two counties of this state, shall organize themselves into a society for the improvement of agriculture within said county or district, and shall have adopted a constitution and by-laws, agreeable to the rules and regulations to be furnished by the Ohio State Board of Agriculture, hereinafter created, and shall have appointed the usual and proper officers; and when the said society shall have raised and paid to their treasurer, by voluntary subscription, or by fees imposed upon its members, any sum of money in each year not less than fifty dollars; and whenever the president of said society shall certify to the respective county auditors the amount thus paid, attested by the oath of the treasurer before a magistrate, it shall be the duty of the said county auditor embraced within the district in which said society shall be organized to draw an order on the treasurer of the respective county, in favor of the president and treasurer of said society, for a sum equal to the amount thus raised: provided, it does not exceed half a cent to each inhabitant in the said county, upon the basis of the last previous national census, but not to exceed in any county the sum of two hundred dollars; and it shall be the duty of the treasurer of said county to pay the same.

SEC. 2. That it shall be the duty of the several county or district societies which may be formed under the provisions of the succeeding section, during the continuance of this act, annually to offer and award premiums for the improvement of soils, tillage, crops, manures, implements, stocks, articles of domestic industry, and such other articles, productions, and improvements as they may deem proper, and may perform all such acts as they may deem best calculated to promote the agriculture and the household manufacturing interests of the district and of the state; and it shall also be their duty so to regulate the amount of premiums and the different grades of the same as that it shall be competent for small as well as large farmers to have an opportunity to compete therefor; and in making their awards special reference shall be had to the profits which may accrue, or be likely to accrue, from the improved mode of raising the crop, or of improving the soil or stock, or of the fabrication of the articles thus offered, with the intention that the premium shall be given for the most economical mode of improvement; and that all persons offering to compete for premiums on improved modes of tillage, or the production of any crops, or other articles, shall be required, before such premiums are adjusted, to deliver to the awarding committee a full and correct statement of the process of such mode of tillage or production, and the expense and value of the same, with a view of showing accurately the profits derived, or expected to be derived, therefrom.

SEC. 3. It shall be the duty of each county or district society to publish annually a list of the awards and an abstract of the treasurer's account in a newspaper of the district, and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of those improvements, and also make a report of the condition of agriculture in their county or district; which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting in December in each year; and no subsequent payment shall be made from the county treasury unless a certificate is presented to the auditor from the president of the State Board, showing that such reports have been duly made. [This section amended by striking out "December" and inserting "January."

SEC. 4. Enumerates the incorporators.

SEC. 5. It shall be the duty of said Board, or any ten of them, to meet in the city of Columbus, on the first Monday of April, after the passage of this act, and to organize by appointing a president, secretary, and treasurer, and such other officers as they may deem necessary; also determine by lot the time that each member shall serve, so that the term of service of one-half the members shall expire annually on the day of the annual meeting in December [January]; and the president shall have power to call meetings of the Board whenever he may deem it expedient.

SEC. 6. There shall be held in the city of Columbus, on the first Wednesday after the first Monday in December, an annual meeting of the Ohio State Board of Agriculture, together with the president of each county agricultural society, or other delegates therefrom, duly authorized, who, shall for the time being, be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consultation as to the wants, prospects, and condition of the agricultural interest throughout the state; and at such annual meeting the several reports from the county societies shall be delivered to the president of the Ohio State Board of Agriculture; and the said president and delegates shall, at this meeting, elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture. [This section amended by striking out "December" and inserting "January."]

SEC. 7. And it shall be the duty of said Board to make an annual report to the General Assembly of this state, embracing the proceedings of the Board for the past year, and an abstract of the proceedings of the several agricultural societies, as well as a general view of the condition of agriculture throughout the state, accompanied by such recommendations as they may deem interesting and useful.

SEC. 8. That the act to authorize and encourage the establishment of agricultural societies in this state, and for other purposes therein set forth, passed March twelfth, one thousand eight hundred and thirty-nine, be and the same is hereby repealed; provided, the acts done, obligations incurred, and rights acquired under the provisions thereof shall remain in nowise altered or affected by this act.

AN ACT

To amend an act entitled "an act for the encouragement of agriculture," passed February 27, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the Ohio State Board of Agriculture shall consist of ten members, five of whom shall constitute a quorum.

SEC. 2. That Allen Trimble, M. L. Sullivant, Samuel Medary, Darius Lapham, A. E. Strickle, Arthur Watts, M. B. Bateham, John Codding, Jared B. Kirtland, and I. Moore be continued members of the Board, the term of service and mode of appointing their successors to remain unalted by this act.

SEC. 3. That the sum of two hundred dollars be and the same is hereby appropriated from the treasury for the use of the Board; and an account of the expenditures of the Board shall be included in the annual report of the Board to the General Assembly.

SEC. 4. So much of the law to which this is an amendment as conflicts with the provisions of this act is hereby repealed.

AN ACT

To protect agricultural fairs and fair grounds.

SECTION 1. *Be it ennoted by the General Assembly of the State of Ohio*, That it shall be lawful for any justice of the peace, on the application of any of the officers of any state, county, township, or any independent agricultural societies, or industrial associations, to appoint a suitable number of special constables, to assist in keeping the peace during the time which such society shall be holding their annual fairs, and make an entry in his docket of the number and names of all such he may appoint

SEC. 2. All such constables so appointed shall have all the power of constables to suppress riots, disturbances, and breaches of the peace; they may, upon view, arrest any person or persons who may be guilty of violating any of the laws of the state; may pursue and arrest any person fleeing from justice in any part of the state; to apprehend any and all persons in the act of committing any offense against the laws thereof; and may, upon reasonable information, supported by affidavit, procure process for the arrest of any person or persons who may be charged with a breach of the peace, and forthwith bring such person or persons before the competent authority, and enforce all the laws for the preservation of good order.

SEC. 3. No person shall be allowed to keep any shop, booth, tent, wagon, or other carriage, vessel, or boat, or any stand or table, for the sale of any spirituous or other liquors, or sell or expose to sale, give, barter, or otherwise dispose of, in or near such shop, booth, tent, wagon, or other carriage, vessel, boat, stand, or table, or in any other way or place, any spirituous or other liquors at or within the distance of two miles from the place where any such agricultural fairs are held.

SEC. 4. That any person or persons who shall be guilty of a breach of this act, and shall be notified by any one of the officers authorized to make an arrest or seizure, or by any other person, that he, she, or they are violating the law, and if, after such notice, such person shall continue in such violation, he, she, or they shall forfeit and pay for such offense a fine of not less than five nor more than fifty dollars, to be paid over to the treasurer of such agricultural society where the offense was committed; and any judge of the court, sheriff, coroner, justice of the peace of the proper county, or any constable of the proper township, or the constables specially appointed, shall, upon view, or information, without warrant, apprehend any person so offending, and seize such booth, tent, or wagon, or other carriage, stand, vessel, or boat, selling spirituous or other liquors, and convey the same to a place of safe-keeping, and take the person so offending before some officer having competent jurisdiction, together with an inventory of the things so seized, and the officer before whom such alleged offender shall be brought shall proceed forthwith to inquire into the truth of the accusation, and, if true, shall enforce the penalties of this act.

SEC. 5. If the accused shall fail to pay such fines as shall be assessed, together with all the costs of proceeding, including the necessary expenses of such seizure, the said officer before whom such offender was tried shall forthwith issue a venditioni exponas, commanding any constable of the township in which such inquiry shall be held to make the fine and costs, necessary expenses, and costs of execution, by sale of so much of the property as shall be necessary therefor, and make return thereof within ten days thereafter.

SEC. 6. That in the execution of the venditioni exponas, the said constable, at least ten days before the sale, shall advertise the property to be sold at two of the most public places of the township where the same is to be sold, at one of which places, to be designated in the notice, between the hours of ten o'clock A.M. and four o'clock P.M., said sale shall be had, said constable first selling or offering for sale the articles which the offender brought on to the ground for traffic; and the overplus of the property so seized as aforesaid, after the satisfaction of said venditioni exponas, shall be delivered to the defendant on demand; but if he shall fail to demand the same for ten days after such sale. the same shall become forfeited to the said agricultural society; and if the property so seized shall be found insufficent to satisfy said venditioni exponas, and costs of execution, said justice of the peace shall at any time thereafter, one request of the treasurer of said society, issue a fieri facias to collect the balance thereof.

Passed April 11, 1856.

AN ACT

To amend section three and section six of an act for the encouragement of agriculture, passed February 27, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section three of the above recited act be amended so as to read as follows: It shall be the duty of each county or district society to publish annually a list of awards and an abstract of the treasurer's account in a newspaper of the district, and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of these improvements; and also make a report of the condition of agriculture in their county or district; which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting January in each year, and no subsequent payment shall be made from the county treasury unless a certificate be presented to the auditor from the president of the State Board, showing that such reports have been made.

SEC. 2. That section six be amended so as to read as follows: There shall be held in the city of Columbus, on the first Wednesday after the first Monday in January, an annual meeting of the Ohio State Board of Agriculture, together with the president of each county agricultural society, or their delegate therefrom duly authorized, who shall, for the time being, be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consulation as to the wants, prospects, and condition of the agricultural interests throughout the State; and at such annual meeting the several reports from county societies shall be delivered to the president of the Ohio State Board of Agriculture; and the said president and delegates shall, at this meeting, elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture.

SEC. 3. That sections three and six be and the same are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its passage.

Passed February 20, 1861.

AN ACT

To protect agricultural fairs.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for any person to exhibit or show any natural or artificial curiosity for any price or gain, or shall set up to let or use for profit any swing, revolving swing, flying horses, or whirligigs, within one-fourth of a mile of the fair ground of any agricultural society in this state, while the fair of such society is being held therein, unless such person shall first have obtained the written permission of the board of such agricultural society to make such exhibition.

SEC. 2. That if any person shall violate the provisions of this act, he shall, on conviction thereof, be fined in any sum not less than one nor more than one hundred dollars; and all moneys derived from the violation of this act shall be appropriated to the support of common schools.

SEC. 3. This act shall take effect from and after its passage.

Passed April 6, 1861.

AN ACT

To provide for the creation and regulation of township agricultural societies.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That when any number of natural persons in any township in the state of Ohio shall form an association for the promotion of agriculture in each township, and shall, under their hands and seals, make a certificate, and acknowledge the same before a justice of the peace, in which shall be specified the name of the society, the object of its formation, and the township in which it shall be located, and shall record the same in the recorder's office of the proper county, such society shall be deemed a body corporate, with succession, and with the power to sue and be sued, plead and be impleaded, defend and be defended, contract and be contracted with; to make and use a common seal, and the same to alter at pleasure; and shall have power to purchase and hold, in fee simple, or to rent or lease such real estate as may be required as a site for holding fairs, not exceeding twenty acres, and to establish all necessary rules and regulations for the management of such fairs and the legitimate business of the society.

SEC. 2. This act shall take effect on and after its passage.

Passed May 1, 1861.

AN ACT

Requiring the return of statistics.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the several township, ward, or precinct assessors shall annually, at the time of taking the lists of personal property for taxation, take from each person and company in his township, ward, or precinct, a statement of the number of acres he or they may have had the preceding year in wheat, rye, barley, corn, oats, and buckwheat, and the number of bushels of each produced the preceding year; the number of acres in timothy grass, and the number of tons of hay produced therefrom the preceding year; the number of acres grown in clover, the number of tons of hay from it, the number of bushels of seed obtained, and the number of acres plowed under for manure; the number of acres planted in tobacco, and the number of pounds obtained; the number of tons of pig iron manufactured, and bushels of stone-coal dug; the number of acres sown in flax, number of pounds of fiber gathered, and the number of bushels of seed obtained; the number of acres planted in sorgo, the number of gallons of sirup manufactured, and the number of pounds of sugar obtained; the number of pounds of maple sugar made, and the number of gallons of sirup manufactured; the number of pounds each of butter and cheese manufactured; the number of acres planted in sweet potatoes, and the number of bushels obtained; the number of acres planted in potatoes, and the number of bushels obtained; the whole number of acres planted in vineyards, the number planted within the last year; the number of pounds of grapes gathered the last year; the number of gallons of wine pressed the last year; the number of pounds of wool shorn the previous year; the number of acres occupied as orchards, and the number of bushels of apples, peaches, and pears produced the previous year; the number of acres used for pasturage the previous year, and the number of acres owned, but uncultivated, within the township the previous year; the amount of all the United States bonds; the amount of all state bonds or certificates of indebtedness of any kind, and the amount of all legal-tender notes or moneys now exempt from taxation by any law of the United States, or any law of this state, owned or held by any person, firm, bank, or corporation, or by any other party whatever within this state. The assessor is hereby authorized to administer all oaths necessary to carry into effect the provisions of this act.

SEC. 2. That the assessors shall make return of all the preceding statistics to their respective county auditors at the same time they return the list of personal property for taxation, and each county auditor shall make return of all such statistics returned to his office to the auditor of state, on or before the first day of August, annually; and if any assessor or county auditor shall neglect or refuse to make out and return statistics as required by this act, shall forfeit and pay to the state of Ohio any sum not less than twenty nor more than one hundred dollars, for the use of the common schools of the proper county; and it is hereby made the duty of the prosecuting attorney of said county, on notice being given to the auditor of state, whose duty it shall be to give such notice whenever any officer or officers shall neglect or refuse to make out and return statistics as required by this act, to proceed to collect said penalty, in the name of the state of Ohio, before any court having competent jurisdiction, and he shall have ten per cent. of amount collected for his fees for collecting the same; and the state board of agriculture and commissioner of statistics shall have access to all statistics contemplated in this act at the office of the auditor of state.

Passed April 3, 1868.

AN ACT

To provide for the establishment of a bureau of statistics in the office of the secretary of state, and to repeal certain acts therein named.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be the duty of the secretary of state annually, hereafter, to prepare from the official reports, and from whatever other reliable sources to which he may obtain access, as full, accurate, and intelligible tables of the statistics of Ohio as may be in his power, and report the results of his labors to the general assembly at its next meeting.

SEC. 2. That in order to the more perfect collection of the statistical information contemplated by this act, it shall be the duty of any state, county, or other officer, without compensation, to answer fully and promptly such special and general questions as the secretary of state may ask in carrying out the provisions of the eighth section of the fifteenth article of the constitution of this state.

SEC. 3. That any person who by this act is required to give information, and who shall refuse or neglect to answer such questions, shall forfeit to the use of the state of Ohio any sum not exceeding fifty dollars, at the discretion of the court of common pleas for the proper county; which fine shall be collected by the prosecuting attorney thereof as other fines are collected by law.

SEC. 4. That the several classes of statistics now returnable to the auditor of state, the attorney-general, or other officer, not necessary to the duties of such officers, be transferred by them to the secretary of state, and be by him embodied in the report provided for in this act.

SEC. 5. That for the purpose of the more complete and efficient performance of the duties enjoined by this act, the secretary of state is hereby authorized, if necessary, to employ some competent person, at an amount not exceeding five hundred dollars, to be paid upon the warrant of the auditor of state, in the same manner as clerks in the office of secretary of state are now paid.

Passed April 17, 1868.

AN ACT

Supplementary to an act entitled "an act for the encouragement of agriculture," passed February 28, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That all county agricultural societies which have been or may hereafter be organized under the act to which this is supplemental, be and the same are hereby declared bodies corporate and politic; and as such shall be capable of suing and being sued, and capable of holding in fee simple such real estate as they may have heretofore or shall hereafter purchase as sites whereon to hold their fair.

SEC. 2. That all deeds, conveyances, and other agreements in writing, made to and by such county agricultural societies, for the purchase of real estate as sites whereon to hold their fairs, shall be good and valid in law and equity, and shall vest a title in fee simple in such societies to said real estate without words of inheritance.

SEC. 3. In all cases where such county agricultural societies shall have heretofore purchased, or shall hereafter purchase, real estate as sites whereon to hold their fairs, the county commissioners of such counties may, if they think it for the interest of the counties and societies, pay out of the county treasurys of such counties the same amount of money, for the purpose of the purchase and improvement of such sites, as shall have been or shall hereafter be paid by such agricultural societies or individuals for such purpose.

SEC. 4. In all cases where agricultural societies shall be dissolved or cease to exist in any county where payments have been made for real estate, or improvements upon such real estate, for the use of any agricultural society, then all such real estate and improvements shall vest in fee simple to the county making such payments.

Passed February 15, 1863.

AN ACT

To prevent spreading of contagious diseases among horses, cattle, and stock.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for any person to sell, barter, or dispose of, or permit to run at large, any horse, cattle, sheep, or other domestic animals, knowing such horse, cattle, sheep, or domestic animals are infected with contagious or infectious disease, or have been recently exposed thereto, unless he shall first duly inform the person to whom he may sell, barter, or dispose of such horse, cattle, sheep, or other domestic animal, of the same; and any person so offending shall, on conviction thereof before any court having competent jurisdiction, be fined in any sum not less than twenty nor more than two hundred dollars, with costs of prosecution, or be confined in the jail of the county for not more than thirty days, at the discretion of the court.

SEC. 2. That if any person, being the owner or having the charge of any horse, cattle, sheep, or any kind of stock, knowing the same to be infected with contagious or infectious disease, shall knowingly permit it to come in contact with any other person's horse or stock, without such person's knowledge or permission, shall be fined in any sum not less than fifty nor more than five hundred dollars, with costs of prosecution, or be confined in the jail of the county for not less than ten nor more than fifty days, at the discretion of the court.

SEC. 3. This act shall take effect from and after its passage.

Passed April 16, 1867.

AN ACT

To more effectually provide for locating, establishing, and constructing ditches, drains, and water-courses in townships.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the township trustees of any township in this state shall have power, whenever in their opinion the same is demanded by, or will be conducive to, the public health, convenience, or welfare, to cause to be established, located, and constructed, as hereinafter provided, any ditch, drain, or water-course, within such township.

SEC. 2. That if the trustees of any such township shall have occasion to exercise the power conferred upon them by this act, they shall authorize the clerk of such township to purchase a sufficient number of printed blanks for all petitions, notices, certificates, statements, and bonds which are necessary to be given under the provisions of this act, and one ditch journal, to be paid for out of the township fund; and at the request of any person or persons who may desire to file a petition and bond for the locating and establishing of a ditch, drain, or water-course, as hereinafter provided, the township clerk shall fill out such blank petition and bond for the person or persons making the request; but nothing in this section shall be taken to prevent the use of written petitions, bonds, certificates, notices, or other requirements provided for in this act.

SEC. 3. That before the township trustees of any such township shall take any action towards locating or establishing any ditch, drain, or water-course, there shall be filed with the township clerk a petition from one or more persons owning lands adjacent to the line of any such proposed ditch, drain, or water-course, setting forth the necessity of the same, with a substantial description of the proposed starting point, route, and terminus, and shall at the same time file a bond with good and sufficient sureties to the acceptance of said township clerk, conditioned to pay all expenses incurred in case the trustees shall refuse to grant the prayer of the petition. And thereupon the township clerk shall give notice to the township trustees of the filing and pendency of said petition, and said trustees shall immediately determine and designate a time and place, when and where they will meet to hear said petition to determine their proceedings thereunder. And thereupon the township clerk shall prepare a necessary number of notices for the petitioner or petitioners, who shall cause one such notice to be given to each owner or owners of each tract of land sought to be affected by such proceedings, of the filing and pendency of said petition; said notice to state substantially the prayer of said petition, the time and place, when and where the same will be for hearing by the township trustees. If any person owning lands sought to be affected by said proceedings be a non-resident of the county, a notice, such as is contemplated by this section, shall be given him by mail, if such residence be known by the said clerk; and if such residence be not known by the said clerk, then by publication, for two consecutive weeks, in some newspaper published, or of general circulation in said county.

SEC. 4. That if any person or persons giving bond conditioned for the payment of all costs and expenses, as provided for in section three of this act, shall fail or refuse to comply with the considerations of such bond, in case the township trustees shall refuse to grant the prayer of said petition, the said trustees may bring suit before any justice of the peace in the township upon his, her, or their bond, and collect all costs and expenses, with costs of prosecution, and pay out the same in conformity with such estimates made in the case; and the ditch journal containing the record of their procedings, or a certified copy therefrom, shall be prima facie evidence of such indebtedness.

SEC. 5. The death of any party or parties in interest shall not work an abatement of proceedings under this act, but the trustees, being notified, shall order such notice as is contemplated in section three of this act to be given to the person or persons succeeding to the right of such deceased party or parties: provided, further, that any ditch may be located and established through a portion of any two townships within the same county, or where the benefits or damages shall attach to lands situated in the same, the trustees of said townships shall constitute a joint board for such proceedings, and in such case the petition shall be filed with, and the record be kept by, the clerk of the township through which the greatest portion of such ditch may run; and in all other respects such joint board shall have the same powers and authority that the township trustees have under this act.

SEC. 6. That any person or persons claiming compensation for lands appropriated for the purpose of constructing any ditch, drain, or water-course under the provisions of this act, shall make his, her, or their application in writing therefor to the clerk of such township, on or before the day appointed for the hearing of said petition, which application shall be laid by said clerk before the trustees; or in case the trustees should establish the ditch, or a portion thereof, on a line different from that specifically described in the petition, insomuch that the same shall pass through tracts of land not described or contemplated by the petition, then and in such case the owner of such land may make his, her, or their application in writing for compensation, at any time before the order of the trustees establishing and locating such ditch is entered upon the township record; and on failure to make such application in either of said cases, such owner or owners shall be deemed and held to have waived his, her, or their rights to such compensation.

SEC. 7. That on the day set for the hearing of said petition, if it appear to the trustees that any person or persons who may be interested in said ditch have not been notified as required by this act, or that any requisite preliminary steps have not been taken, notice to be given, or such preliminary steps to be taken; and a majority of said trustees shall be competent to perform any of the requirements of this act. But if said trustees shall find that said bond has been filed, and said notice been given, they shall proceed to hear and determine said petition, and shall view the premises along said proposed route; and if they find such ditch, drain, or water-course to be necessary, and that the same is demanded by, or will be conducive to, the public health, convenience, and welfare, shall proceed to locate and establish such ditch, drain, or water-course, in substantial conformity with the route described in the petition, or as near said described route as in their opinion would best answer the purpose; and they shall at the same time examine into and determine all applications made to them for compensation, as provided for in the sixth section of this act, and shall specify the several amounts, by whom and to whom to be paid, and the time of payment. Said trustees, in hearing and determining said petition, may call to their assistance an engineer to locate, level, and measure the course of such ditch, drain, or water-course, and such other assistance as may be necessary, and may adjourn from time to time to determine their proceedings herein.

SEC. 8. That at the time of the hearing and determining of said petition, if any person or persons interested in the location of such ditch make a written request to change the route of said ditch, for his, her, or their own special interest and convenience, the trustees may so change the said route, provided a good and sufficient ditch, drain, or water-course can be had; but in all cases where such change would increase the amount of work to open the said ditch, then the whole of said increased amount of work shall be apportioned to the person or persons making said request, in addition to his, her, or their proper share of the balance of the ditch.

SEC. 9. That it shall be the duty of the said township trustees, in locating and establishing a ditch, drain, or water-course under the provisions of this act, to divide the same into suitable sections, not less in number than the number of owners of land through which the same may be located, and apportion the said sections equitably to the parties benefited, according to the benefits derived therefrom, and shall prescribe the time within which the work shall be completed and by whom done; and the day upon which the said trustees conclude their proceedings on said petition, according to sections seven, eight, and nine of this act, shall be deemed the date of their decision on said petition.

SEC. 10. The following fees shall be considered lawful allowances for locating and establishing ditches, drains, or water-courses under this act: Township trustees, one dollar and fifty cents per day each; township clerk, for recording each individual proceedings of trustees, ten cents per hundred words; for apportioning cost of locating and recording the same, twenty-five cents; for each petition or bond, fifteen cents; for each notice or statement, five cents; chainman or axman, each one dollar per day; engineer, five dollars per day for locating, and three dollars for plat and profile.

SEC. 11. That within five days after their said decision on said petition, the trustees shall make a full and complete report of their proceedings had on said petition to the township clerk; and in said report they shall designate the amount of costs made in locating such ditch, according to section ten of this act, and shall prescribe the time when such costs shall be paid, together with the width, depth, and flare of the ditch determined upon.

SEC. 12. That the township clerk shall record the said report of the trustees in the ditch journal of the township, and apportion the payment of the costs of location to the parties interested in such ditch, so that the ratio of each person's share of costs is to the whole costs as is the ratio of his, her, or their number of section or sections, so apportioned by the trustees, to the whole number of sections of the ditch; and the said clerk shall prepare, for the use of each person having costs to pay and labor to perform, a brief statement in writing, or by printed blank filled out, describing briefly his, her, or their apportionment of such ditch, drain, or water-course, together with the length, depth, width, and flare of the same, the amount of costs assessed against such person or persons, when to be paid, and by what time said work to be completed.

SEC. 13. The township trustees, at the expiration of the time specified for the completion of such work as provided for in section nine of this act, may, if they deem it necessary and proper, extend the time for the completion of such work to a time not exceeding four months from the time previously specified, and the township clerk shall record such extension of time on the ditch journal.

SEC. 14. And when the said trustees have located and established any such ditch, drain, or water-course under this act, they may, if they deem it necessary, make an order requiring flood-gates or water-ways to be erected along the line thereof at all such places, when the owner or owners of land along such ditch may desire to build or place any fence or fences over the same; and said trustees may prescribe in their said order the length, height, and kind of flood-gates or water-ways which shall be erected at all such fence crossings, and the persons owning the land upon which the same may be erected shall thereafter keep the same in good repair; and if any such owner shall drive, or permit stakes to be driven in the channel of such ditch, or in any other manner obstruct said ditch at any such fence crossing or other part of such ditch, and permit such obstructions to remain after ten days' notice in writing by the township trustees, it shall be the duty of said trustees to sell out the work of moving such obstructions and hindrances to the lowest responsible bidder, after giving ten days' notice of the time and place of such sale, and the time within which the work is to be performed; said notice to be given by posting up written notices or handbills in three or more of the most public places in the township. When such sale is made, the said trustees shall take sufficient security for the performance of said work; after said sale, the proceedings to collect the amount necessary to pay the purchaser for said work shall be the same as are provided in section twenty-two of this act.

SEC. 15. It shall be lawful for any person or persons interested in the location of such ditch, drain, or water-course, or in the amount of compensation determined upon by said trustees, to take an appeal from the proceedings of said trustees to the probate court of such county, by giving written notice thereof to the clerk of such township within eight days after the decision of such trustees, and by filing with such clerk a bond, with two or more sufficient securities, conditioned for the payment of all costs made upon such appeal in case the decision of said trustees shall be sustained in said probate court; which bond shall be made to the acceptance of said township clerk and the probate judge of such county, their acceptance indorsed on the same, and filed by said probate judge with the other papers in the case. The township clerk shall thereupon, at the request of each person so appealing, his agent or attorney, make out and deliver to each such person, his agent or attorney, a full and complete certified transcript of the proceedings had in the case, which transcript shall be filed with the probate judge of such county within ten days from the filing of such bond.

SEC. 16. It shall be the duty of the probate judge, upon the filing of such bond and transcript as provided for in the fifteenth section of this act, to impanel a jury of twelve disinterested freeholders of the county (who shall not be residents of such township), who shall constitute a jury for such case; and said probate judge shall issue, over his hand and seal of office, a notice of such appointment, directed to the sheriff of such county, returnable on a day, not exceeding forty days, therein named, which notice shall also specify the time of meeting of said jury in said probate court; that it shall be the duty of the appellant to notify in writing all persons so interested in the location of such ditch, drain, or water-course, of the time fixed by the probate court for the meeting of such jury; and if any person shall reside out of the state, or can not be served in writing with such notice, said probate judge, being notified of that fact, shall cause such notice to be published for three consecutive weeks in some newspaper printed or of general circulation in said county; that proof of the publication of such notice shall be filed in such probate court before the meeting of such jury, together with proof of the service of such notice in writing, on all such persons interested as aforesaid, at or before the time so specified: Provided, that in all cases where two or more persons shall have taken an appeal according to the preceding section, the probate judge shall order the consolidation of such cases into one case, and the rights of all parties in interest shall be investigated by the jury in the one case thus consolidated. In the event of any such consolidation, any one of the appellants shall be competent to give the notice required in this section.

SEC. 17. That at the time specified in said notice said probate judge shall hear and determine all preliminary questions pertaining to such case, and shall thereupon administer an oath to said jury faithfully and impartially, and upon actual view of the premises along the route of such ditch, and report in writing to said court:

First—Whether it will be conducive to the public health, conveniences, or welfare to cause said proposed ditch, drain, or water-course to be established or located.

Second—The amount of compensation due to each person in case of the location of the same; and,

Third—The amount of labor to be performed by each person interested in the opening and constructing of the same.

That the jury shall file such report with the probate judge within nine days after taking such oath (unless the court for good cause allow further time), specifying the sections and work to be done, as provided in section nine of this act. The probate judge is hereby authorized to adjourn the proceedings in the premises from time to time, as circumstances may require. If, on the hearing of the preliminary proceedings referred to above in this section, the probate judge shall find that the proceedings in appeal have not been perfected according to this act, he shall dismiss the appeal at the cost of the appellant, and certify such dismissal back to the trustees of the township, who shall thereupon proceed as if no appeal had been taken: provided, that such judge may, in his discretion, order and allow the correction of any technical defect, error, or omission in making such appeal.

SEC. 18. Upon the return of said jury, said probate judge shall make a record of all their proceedings had in such case before him, and shall also make such order as to the payment of compensation for land used, for work to be performed, and as to the time of payment and opening and locating such ditch, drain, or water-course as said jury shall report, and shall also tax such costs in said proceedings as are provided for by law in similar cases, which costs, together with those made before said township trustees, shall be divided, to be paid in fair proportion, amongst the several persons interested in the location of such ditch, drain, or water-course, in conformity with the report of said jury: provided, that if the report of such jury shall not be in favor of the appellant, all costs made on such proceedings in said probate court shall be taxed to and paid by such appellant, and collected as judgments at law as in other cases; but if two or more persons shall have appealed, and the report of said jury shall be favorable to some of the appellants, and against the other appellants, the probate judge shall apportion said cost equitably among all the other appellants, except those in whose favor the report of the jury is made; and provided, also, that said township trustees shall be allowed one dollar and fifty cents per day for each day employed in such proceeding; and said jury shall be allowed one dollar and fifty cents per day each, together with mileage from their respective residences to the probate court and to the place of said proposed ditch, drain, or water-course, at the rate of five cents per mile.

SEC. 19. That said ditch, drain, or water-course shall be opened and worked, and compensation for land used in the construction of the same paid within the time specified in the order of said probate judge; and at the expiration of such time any such work remaining undone, and the probate judge being notified of that fact, shall immediately give notice of the sale of such work by sections, or parts of sections, of said ditch, drain, or water-course, to the lowest bidder, by written or printed hand-bills. The time of such sale shall not be less than ten nor more than twenty days from the date of the notice; and the place of sale shall be either at the door of the court-house, or at the proposed terminus of such ditch, as said probate judge shall direct; that said probate judge shall take such security for the performance of such work as he may deem necessary, and he shall, immediately after such sale, enter his proceedings on his journal, and make them part of the record in such case; and shall thereupon certify to the auditor of the county the several amounts, including costs apportioned, so assessed against each owner or person interested as aforesaid, describing each piece or parcel of land so to be charged. And the said auditor shall thereupon enter the same on the duplicate of such township, to be collected as other taxes are collected, and shall be paid over on the order of the county auditor to the probate judge of the county, who shall keep a correct account of same, and shall pay the same over to the several persons entitled thereto, whenever he shall be satisfied that the several sections have been completed according to the report of the jury theretofore made.

SEC. 20. As soon as an appeal shall be perfected from the decision of said township trustees, all further proceedings before them on said petition shall be stayed; but if no appeal shall be taken, as provided for in section fifteen of this act, then it shall be the duty of said trustees, upon the expiration of the time specified by them for the opening of such ditch, drain, or water-course, immediately proceed to inspect such ditch; and if any section or sections, or part of a section, has not been completed, the said trustees shall accept a bond with sufficient security from such person or persons having such unfinished work to perform, conditioned for the faithful completion of such work within such time as the said trustees shall specify in the bond; but if any such person or persons aforementioned, having unfinished work at the time of inspection as aforesaid, who shall fail or refuse to give bond for the completion of such unfinished work, then the said trustees shall immediately proceed to sell such unfinished work by such sections to the lowest bidders, by setting up written or printed notices of such sale in at least three of the most public places in such township, specifying the time when such work shall be completed; said notices to be posted up for at least ten days before the day of sale; and said trustees shall take such bond or other security for the performance of such work as they may deem proper: provided, that, before the work of constructing such ditch shall be sold by the township trustees, said trustees shall make a fair and impartial estimate of the cost of said work, which estimate shall be entered upon the ditch journal, and said work shall not be sold for any sum exceeding twenty per cent. above said estimate, and the fees and allowances in all such proceedings, and the apportioning and assessing of such costs and expenses, shall be the same as in the original location and establishment of the ditch, to be paid by the person or persons whose section or sections of such ditch shall be sold, and collected and paid out as provided for in section twenty-two of this act.

SEC. 21. If any person or persons giving bond in either case, or in both cases, as provided in section twenty of this act, for the completion of such unfinished work, shall fail to comply with the conditions of said bond within ten days after the time specified in the said bond for the completion of such work, he, she, or they shall be held liable on the said bonds to pay all costs and expenses incurred, and pay all damages and costs of prosecution arising in consequence thereof; and said township trustees shall immediately bring suit in the name of their said township, before any court having competent jurisdiction, against such person or persons given the said bond, for all cost and expenses resulting from the non-performance of such work, and the journal containing the record of their proceedings, or a certified copy therefrom, shall be prima facie evidence of such indebtedness. And it shall be lawful for any person or persons who shall have sustained any damage in consequence of the non-performance of such said work to bring suit, before any justice of the peace of the township whenever the damage has been sustained, against the said person or persons, and collect damages, with costs of prosecution, in the same manner as the law provides in suits for damages. And the said trustees shall immediately proceed to sell or re-sell, as the case may be, such said unfinished section or sections, in conformity with the provisions of section twenty of this act, in the same manner as if no previous bond or bonds on previous sale had been taken; and if the purchaser or purchasers shall also fail to complete such work, then the said trustees shall again enter suit as aforementioned and provided for in this section of this act, and also again re-sell in conformity with this act, until the said work shall be completed.

SEC. 22. As soon as such work shall be completed in conformity with such sale, as provided for in section twenty of this act, and to the satisfaction of said trustees, said trustees shall immediately certify to the auditor of the county the amount each section sold for, adding the proportionate amount of costs and expenses of such sale, together with a correct description of each piece of land upon which the same is assessed; and said auditor shall place the same on the duplicate, to be collected as other state and county taxes are collected; and said trustees shall at the same time certify the amount due to each person to the auditor of the county, and said auditor shall draw orders for the payment of such amount out of the county treasury: provided, that any person interested may pay the amount of the purchase money and proportionate share of costs and expenses as aforesaid to said trustees at any time before the same are charged on the duplicate, to be paid by said trustees to the purchaser of such section or sections respectively.

SEC. 23. If the jury so appointed by said probate judge shall report in conformity with the proceedings of said trustees, as far as the interest of the persons so appealing shall be concerned, then and in that case all costs made on such appeal shall be taxed against such appellant.

SEC. 24. That if any person or persons shall fail or refuse to pay his, her, or their apportionment of costs of the locating and establishment of such ditch, drain, or water-course, or of the cleaning out, deepening, widening, or repairing of such ditch, drain, or water-course, by the time specified by the township trustees for the payment of such costs, the said trustees shall certify the same to the auditor of the county, giving a correct description of each piece of land upon which such cost is assessed, and the said auditor shall place the same on the tax duplicate, to be collected as other state and county taxes are collected; and the county treasurer shall pay over such amount to the township treasurer as other township funds, specifying the purpose of the same; and the said trustees shall pay out the same in conformity with such record on the ditch journal.

SEC. 25. That if any township trustees shall fail or neglect their duty devolving upon them according to the provisions of this act, and any person shall sustain any damage in consequence of such failure or neglect, it shall be lawful for such said person to bring suit before any justice of the peace against such said trustees for damage and cost of prosecution, at the discretion of the court, in the same manner as the law in suits for damages provides.

SEC. 26. The township trustees shall have the same power to cause any ditch, drain, or water-course located and constructed under the provisions of this act or acts, herein repealed, or otherwise, to deepen, widen, or enlarge the capacity of such ditch, drain, or water-course as they have to order any such ditch, drain, or water-course to be located and constructed under this act, and the same proceeding, so far as necessary and applicable, shall be had as is required in the location and construction of the same: in all cases the expenses of the same to be apportioned in the same manner as in the original construction.

SEC. 27 [as amended]. For the purpose of keeping any ditch open and in good repair that may be located and constructed under the provisions of this act, or the acts herein repealed, any one resident land-owner, through whose land such ditch passes or adjacent thereto, may make his or her statement in writing to the trustees of the township wherein the said ditch is located. Upon receiving said statement as aforesaid the said trustees shall immediately appoint one of their number to go upon the line of said ditch and examine the same carefully, and if he shall be of the opinion that the said ditch should be opened and repaired, the said trustees shall immediately order the township clerk to forthwith notify the owner or owners of each tract of land, or their agent, so far as their residence is known to said clerk, directing him or them to clean out and repair said ditch to its original capacity within thirty days from the date of said notice: provided, that if, at the expiration of said thirty days' notice, the work of cleaning out and repairing said ditch on any of the tracts aforesaid shall not have been completed, the said trustees may, in their discretion, extend the time for completing said work for a period not exceeding sixty days from the expiration of the notice aforesaid, and upon such conditions as the said trustees may prescribe respecting its completion. And in order that each person may know the original capacity of said ditch, the said notice shall contain a verbatim copy, taken from the journal record of said ditch, of each person's original apportionment, together with the length, depth, width, and flare of the same; said notice to be in writing or printed, and to be sent to said owner or owners by mail or otherwise; and each person so notified shall clean out and repair the same portion of said ditch as was originally apportioned to his, her, or their tract of land. Said tracts of land shall be the same land that the journal record of said ditch shall describe.

But if the residence of the owner or owners of any such tract of land, or his, her, or their agent is not known to the said clerk, it shall be the duty of said clerk to cause to be posted up in at least three of the most public places in the township in which the said ditch is located, written or printed notices of the time required for the cleaning out and repairing of said ditch. Immediately after the expiration of said thirty days, or such other period of time as may have been granted or extended to any person for the completion of the work aforesaid, the said trustees shall appoint one of their number to examine said ditch and determine whether it has been cleaned out and repaired as directed in said notice; and if the ditch has been cleaned out and repaired to its original capacity, the parties interested shall be discharged from further obligation under said application and notice; but if, on examination, any of the parties who have been notified as aforementioned shall not have cleaned out and repaired such ditch, as directed in said notice, the said trustees shall then immediately proceed to sell said cleaning out and repairing of said ditch to the lowest bidder, in substantial conformity, and in the same manner as the provisions of this act provides for selling unfinished sections of ditches. The said trustee, appointed by the said trustees, as aforementioned, to examine such ditch, shall be entitled to receive one dollar and fifty cents per day for his services, to be paid out of the township fund. It shall be the duty of the said clerk to make a full and complete record of the proceedings had in such case, and the said clerk shall be paid for his services out of the township fund such amount as is allowed him for similar services according to section ten of this act, except that portion of his services relating to such said sale, then that portion of his services shall be included in the assessment made against the parties interested, the same as other ditch sales.

SEC. 28 [as amended]. That the township trustees shall have the same power to cause any ditch, drain, or water-course located and constructed by county commissioners, to be cleaned out, widened, deepened, and repaired, and to locate lateral ditches which may intersect ditches located by county commissioners, as they have to order the location and construction of a ditch, drain, or water-course under this act, and the proceedings of such cases shall be in substantial conformity with the provisions of this act.

SEC. 29. That the collection of taxes, or assessments levied or assessed, or ordered to be levied or assessed, to pay for the location and construction of any ditch, drain, or water-course laid out and constructed under and by authority of this act, shall not be perpetually enjoined or declared absolutely void in consequence of any error committed by the engineer or surveyor, or by the township clerk, or by the trustees of a township, in the location and establishment thereof, nor by any reason of an error or merely technical informality appearing in the petition or record of the proceedings, nor by reason of any want of notice by which such ditch, drain, or water-course shall have been located and established. But the court in which any proceedings is now pending, or which may hereafter be brought, to reverse or declare void that portion of the proceedings of said trustees by which any such taxes or assessments levied or assessed, or ordered to be levied or assessed, to pay for the location and construction of said ditch, drain, or water-course, or to enjoin the tax or assessment levied or assessed, or ordered to be levied or assessed, to pay for the labor and fees aforesaid, shall, if there be manifest error in said proceedings, set the same aside, and allow the plaintiff in the action to come in, and show wherein he has been injured thereby; and the journal containing the record of the proceedings of the said trustees on said ditch, or a certified copy therefrom, shall be prima facie evidence of such indebtedness, and the manner in which the said assessment was made; and the court shall allow the said trustees, or any of the parties interested, to show the lawfulness of the proceedings had in the case; and said court, in the final hearing, may make such order in the case as shall be just and equitable, and shall order the costs of said proceedings before him to be paid by the plaintiff, or by the parties interested in the said ditch, or by the county treasury, as justice may require.

SEC. 30. No order for the opening or sale of any ditch, or any part thereof, located and established under this act, shall be made until the full amount of such compensation for land appropriated shall have been paid.

SEC. 31. That the act entitled "An act to provide for locating, establishing, and constructing ditches, drains, and water-courses in townships, and to repeal a certain act therein named, passed May 6, 1868" (S. & S., p. 322); also an act entitled an act supplementary to an act entitled an act to provide for locating, establishing, and constructing ditches, drains, and water-courses in townships, and to repeal a certain act therein named, passed May 6, 1868, passed April 18, 1870 (O. L., vol. 67, p. 93); also an act entitled an act to amend sections twelve and thirteen of an act entitled an act to provide for locating, establishing, and constructing ditches, drains, and water-courses in townships, and to repeal a certain act therein named, passed May 6, 1868, passed March 13, 1872 (O. L., vol. 69, p 49), be and the same are hereby repealed: provided, that such repeal shall not affect or impair any right acquired, or liability incurred, or proceedings had under the laws so repealed.

SEC. 32. This act shall take effect and be in force from and after its passage.

AN ACT

Relative to the construction of ditches, drains, and water-courses.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That section sixteen be amended to read as follows:

Section 16. It shall be the duty of the probate judge, upon the filing of such bond and transcript, as provided for in the fifteenth section of this act, to issue a notice and deliver the same to the appellants, returnable on a day, not exceeding fifteen days, therein named, which notice shall specify the time of meeting of said parties before said court, for the purpose of hearing and determining all preliminary questions pertaining to such case. It shall be the duty of the appellants to serve said notice by copy on all persons interested in the location of said ditch, drain, or water-course residing within the county where said proposed ditch, drain, or water-course is located, and if any person so interested reside out of the county, or cannot be served by a copy of said notice, said appellants shall cause such notice to be published for three consecutive weeks in some newspaper of general circulation in said county, that proof of the publication of such notice shall be filed in such probate court on or before the day fixed for the impaneling of the jury, together with proof of the service of such notice on all persons interested as aforesaid, at least three days before the time so specified: provided, that in all cases where two or more persons shall have taken an appeal, according to the preceding section, the probate judge shall order the consolidation of such cases, and the rights of all the parties in interest shall be determined by the jury in the one case thus consolidated, and any one of the appellants shall be competent to give the notice required in this section.

SEC. 2. That section seventeen be so amended as to read as follows:

Section 17. That at the time specified in said notice, said probate judge shall hear and determine all preliminary questions pertaining to such case, and if, on the hearing, he shall find that the proceedings in appeal have not been perfected according to this act, he shall dismiss the appeal at the cost of the appellant, and certify such dismissal back to the trustees of the township, who shall thereupon proceed as if no appeal had been taken: provided, that such judge may, in his discretion, order and allow the correction of any technical defect, error, or omission in making such appeal. But if the probate judge should find the preliminary proceedings for appeal in conformity with the provisions of this act, he shall impanel a jury of twelve men, disinterested freeholders of the county (who shall not be residents of such township), who shall constitute a jury for such case, and said probate judge shall issue, over his hand and seal of office, a notice of such appointment, directed to the sheriff of such county, returnable on a day, not exceeding forty days, therein named, which notice shall specify the time of meeting of said jury in said probate court, at which time said probate judge shall administer an oath to said jury, faithfully and impartially, and upon actual view of the premises along the route of such ditch, and at least two-thirds of said jury shall report in writing to said court: First, whether it will be conducive to the public health, convenience, or welfare to cause said proposed ditch, drain, or water-course to be established or located; second, the amount of compensation due to each person in case of the location of the same; and, third, the amount of labor to be performed by each person interested in the opening and constructing of the same. That said report shall be filed with the probate judge by said jury within nine days after taking such oath, unless for good cause the court allow further time.

SEC 3. That section thirty be amended to read as follows:

Section 30. No order for the opening or sale of any ditch, or any part thereof, located and established under this act, shall be made until the full amount of such compensation for land appropriated shall have been paid or deposited.

SEC. 4. That sections sixteen, seventeen, and thirty of the above recited acts are hereby repealed.

SEC. 5. That section six of the act entitled "An act relating to ditches," passed April 12, 1871 (O. L., Vol. 68, p. 60), be so amended as to read as follows:

Section 6 It shall be the duty of the probate judge, upon the filing of such undertaking and transcript, as provided in the preceding section, to docket the appeal, entitling the case, the appellant plaintiff, and the county commissioners defendants, and fix a time, not less than ten nor more than twenty days from the entering of said appeal, for the hearing and determining all preliminary questions pertaining to said case. At the time specified for said hearing, the probate judge shall hear and determine all questions arising upon the record, and if he find that said proceedings are irregular in substance, or that the appeal has not been perfected according to law, he shall dismiss the appeal at the cost of the appellant, and certify such dismissal, with his findings thereon, back to the said commissioners: provided, said probate judge may, in his discretion, order and allow the correction of any technical defect, error, or omission in making such appeal.

SEC. 6. That section seven of said act, passed April 12, 1871, be so amended as to read as follows:

Section 7. If the probate judge shall find that the appeal has been properly taken, and that the proceedings have been regular and in conformity to law, he shall proceed to impanel a jury in the case in the same manner as is provided by law for the drawing and impaneling of a jury in the cases of the condemnation of private property for the use of corporations in the act entitled "An act prescribing the mode of assessment and collection of compensation to the owners of private property appropriated by and to the use of corporations," passed April 23, 1872, and shall issue a venire therefor directed to the sheriff of the county, returnable on a day named therein, not exceeding ten days from the date thereof. On the appearance and impaneling of the jury, the probate judge shall administer to them an oath to faithfully and impartially view the premises along the route of said proposed ditch, and report their verdict in writing to said court whether it will be conducive to the public health and welfare, and whether the proposed route thereof is practicable, which said verdict shall be agreed upon and signed by at least two-thirds of the jury, and returned in open court: provided, that after the view of the premises, and before verdict, the parties may offer evidence and be heard in person or by counsel before said jury.

SEC. 7. That sections sixteen, seventeen, and thirty of the act of April 18, 1874, and ctions six and seven of the act of April 12, 1871, as recited in the title to this act, be and the same are hereby repealed, and this act shall take effect and be in force from its passage.

AN ACT

Relative to the construction of ditches, drains, and water-courses.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the amendment to section seventeen of the above recited act be amended so as to read as follows:

Section 17. That at the time specified in said notice, said probate judge shall hear and determine all preliminary questions pertaining to such case, and if, on the hearing, he shall find that the proceedings in appeal have not been perfected according to this act, he shall dismiss the appeal at the cost of the appellant, and certify such dismissal back to the trustees of the township, who shall thereupon proceed as if no appeal had been taken; provided that such judge may, in his discretion, order and allow the correction of any technical defect, error, or omission in making such appeal; but if the probate judge should find the preliminary proceeding for appeal in substantial conformity with the provisions of this act, he shall impanel a jury of twelve men, disinterested freeholders of the county (who shall not be residents of such township), who shall constitute a jury for such case, and said probate judge shall issue, over his hand and seal of office, a notice of such appointment, directed to the sheriff of such county, returnable on a day (not exceeding forty days) therein named, which notice shall specify the time of meeting of said jury, in said probate court. If any of said jurors shall fail to attend, or shall for good cause be excused from serving, or shall be set aside on account of a challenge, the panel shall be filled with talesmen as in jury cases in the courts of common pleas. Each party shall be entitled to two peremptory challenges, and may make any number of challenges for the causes for which challenges are allowed in the court of common pleas In respect to challenges, the appellant or appellants shall be considered one party, and the petitioners as the other; the jury shall consist of twelve men, and shall be sworn to try all the claims which are represented by the appellants, if there be more than one; the jury shall then, under the care of the sheriff or deputy sheriff, and with such person or persons as the court may appoint to show them the premises, and before any testimony shall be given, except the plat and field notes of the ditch, drain, or water-course, if there be any, and the title papers, if produced, of the claimants, which in that case they shall take with them, proceed to examine the ditch, drain, or water-course, as established or ordered, and the property of the several claimants taken therefor, or alleged to be injured thereby, and after making such examination shall return to the probate court at the time the court shall have appointed, whereupon the trial before said jury shall proceed in the same manner as in other jury trials in said court; the jury shall render to the court a verdict in writing, and shall find therein, first, whether it will be conducive to the public health, convenience, or welfare, to cause said proposed ditch drain, or water-course to be established or located; second, the amount of compensation due each person claiming compensation in case of location of the same, which said compensation shall be computed without deduction for benefits to any property of such person; third, the amount of labor to be performed by each person interested in the opening and construction of the same. The probate judge is hereby authorized to adjourn the proceedings in the premises from time to time, as circumstances may require.

SEC. 2. That section seventeen of the above mentioned act be and the same is hereby repealed.

SEC. 3. This act shall take effect from and after its passage.

AN ACT

Relating to ditches.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That sections two and thirteen of the above entitled act be so amended as to read as follows:

Section 2. That before the commissioners shall establish any ditch, there shall be filed with the auditor of such county a petition, signed by one or more of the landowners whose land will be assessed for expenses of the same, setting forth the necessity thereof, with a general description of the proposed starting point, route, and terminus, and shall file a bond, with good and sufficient securities to the acceptance of the auditor, conditioned to pay all expenses in case the commissioners shall fail to establish said proposed ditch; and it shall be the duty of the auditor to furnish a copy of said petition to the commissioners, who shall thereupon direct the county surveyor or a competent engineer to go upon the line of the proposed ditch, to view and make a computation of the number of cubic yards of earth to be removed from each section, with an estimate of the cost of construction of the work apportioned to each parcel of land, and specify the manner in which the work shall be done, the necessary flood gates, water-ways, bridges, and farm crossings to be made, with such other suggestions as he may deem material, and file his report with the auditor, and the commissioners shall fix a day for the hearing thereof. It shall be the duty of the auditor, on said report being filed and the day fixed by the commissioners for the hearing thereof, to issue a notice to the owners of all lands interested or affected by said proposed ditch, drain, or water-course, of the day for hearing said petition, and the substance of the prayer thereof, which shall be served on all resident land-owners at least sixty days prior to the day set for hearing, by one of the petitioners, who shall make a return on the original notice, under oath, of the manner and time said notice was served; and a like notice, published in some newspaper of general circulation in the county, for four consecutive weeks prior to the day of hearing said petition, shall be deemed a sufficient notice to non-resident landowners; and said commissioners, surveyor, and engineer shall be confined, in their operations under this section, between the points of commencing and ending of said ditch, drain, or water-course, as set forth in the original petition.

Section 13. If the appeal is taken on account of damages or compensation allowed by the commissioners, such proceedings shall be had to determine the amount as are required by the act entitled "An act to provide for compensation and damages to owners of private property appropriated to the use of corporations," passed April 30, 1852; and the compensation or damages found in favor of said claimant shall be certified by said probate judge to the county auditor, and paid out of the county treasury from the general fund. If no damages or compensation shall have been claimed, or if no appeal shall have been taken from the report of the surveyor, and said petitioners shall not have discontinued proceedings as above provided, or if the damages and compensation shall have been paid out of the county treasury, the said commissioners shall proceed to make a just and fair estimate of the average cash value of the construction per linear rod, cubic yard, or foot of earth, and every section or allotment of such ditch, and apportion the costs of the location thereof, including printer's fees, the damages and compensation (if any shall have been assessed), and costs in probate court, if adjudged against the commissioners, and the labor of constructing said ditch, and award to each person or persons owning lands through or in the vicinity of which said proposed ditch may be established, as shall be deemed just and right, according to the benefits to be derived by constructing the same, and shall specify the time in which said costs and expenses shall be paid to the county treasurer, and the time and manner in which such labor shall be performed, and appoint a day on which they will meet to hear exceptions to such appointment; and they shall cause a stake or monument to be placed at the boundaries of each of the several portions, which shall be numbered progressively down the stream, at each one hundred feet. And said auditor shall give notice of the apportionment, containing the name of the owner as it appears on the tax duplicate at the date of said notice; description of each parcel of land assessed for the construction of such ditch; number of rods or feet apportioned to each of said parcels of lands; the estimated value per rod, cubic yard, or foot of construction; the expenses, including damages and compensation, if any shall have been awarded. And said notice shall state the time as fixed by the commissioners, when the costs and expenses shall be paid and the work completed, and also the day when and where the commissioners will meet to hear exceptions to such apportionment. Said notice shall be served at least ten days before the day set for the hearing [of] exceptions, by delivering a copy of the same to each resident land-owner mentioned therein, or by leaving said copy at his, her, or their usual place of residence, by any person appointed by the auditor to serve the same. The time and manner of serving said notice shall be indorsed on said original notice under oath, and the auditor and commissioners shall allow a reasonable compensation to the person serving the same, which shall be taxed in the bill of expenses of said improvement; and a like notice to non-resident land-owners, published in some newspaper of general circulation in the county, for four consecutive weeks prior to the day of hearing exceptions, shall be deemed and held to be a sufficient notice to them. On the day named in such notice the commissioners shall meet, and if no exceptions have been filed to said apportionment, they shall confirm the same; but if exceptions in writing have been filed, they shall hear such exceptions, and any testimony offered by any party who has filed exceptions; and either one of said commissioners shall be authorized to administer oaths to witnesses. On said hearing they may confirm said apportionment or change the same, and may make an actual and careful view of the route of said ditch, or any part thereof, and the lands to be affected thereby; but in no case shall they hear exceptions to, or review any question with reference to damages or compensation, except as to the apportionment of such damages or compensation as above provided. In making the apportionment specified in this section, the commissioners shall assess, separately, according to their respective value, the particular estate which any person interested in the construction of the ditch may have in the land affected thereby, so that estates for life, for term of years, or in remainder, shall each pay its just proportion of the assessment. And all estimates shall be made by actual, and not apparent quantities or distance.

SEC. 2. That the second and thirteenth sections of an act to amend an act therein named, passed March 28, 1873, be and the same are hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its passage.

AN ACT

Supplementary to an act entitled "An act to more effectually provide for locating, establishing, and constructing ditches, drains, and water-courses in townships, and to repeal certain acts therein named."

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That where the records, proceedings, or papers pertaining to any "ditch, drain, or water-course," under the provisions of this act, to which this is supplementary, have in any way been lost or destroyed, it shall be the duty of the trustees to re-establish said ditch on the original route, and determine the depth, width, and flare, and divide the same into suitable sections, and apportion the same as provided in section nine of the act to which this is supplementary, and make a full record of such proceedings, and the record thus made shall thereafter be deemed conclusive evidence of the original capacity and apportionment of said ditch.

SEC. 3 [2] This act shall take effect from and after its passage.

Passed March 30, 1875.

AN ACT

To amend an act passed May 1, 1861, entitled "An act to provide for the creation and regulation of township agricultural societies."

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That section 1 of the above recited act be so amended as to read as follows:

Section 1. That when any number of natural persons of any township in the State of Ohio shall form an association for the promotion of agriculture in such township, and shall, under their hands and seals, make a certificate and acknowledge the same before a justice of the peace, in which shall be specified the name of the society, the objects of its formation, and the township in which it shall be located, and shall record the same in the recorder's office of the proper county, such society shall be deemed a body corporate, with succession, and with power to sue and be sued, plead and be impleaded, defend and be defended, contract and be contracted with; to make and use a common seal and the same to alter at pleasure; and shall have power to purchase and hold in fee simple, or to rent or lease such estate as may be required as a site for holding fairs, not exceeding forty acres, and to establish all necessary rules and regulations for the management of such fairs and the legitimate business of the society.

SEC. 2. That section one of the above recited act be and the same is hereby repealed.

SEC. 3. That this act take effect from and after its passage.

Passed February 11, 1877.

AN ACT

To amend an act entitled "An act to establish a uniform standard of weights and measures," passed March 21, 1863 (S. & S., p. 926); passed February 21, 1873 (O. L., vol. 70, p. 39), and as amended March 10, 1876 (O. L., 73, p. 22).

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section one of the above recited act be so amended as to read as follows:

Section 1. Whenever the following articles are hereafter sold and no special agreement as to the measure is made by the contracting parties, the bushel shall consist of the following weights:

Wheat, sixty pounds; rye, fifty-six pounds; corn, shelled, fifty-six pounds; corn, in the ear, seventy pounds, until the first of January of each year next after it is raised, and from and after that date, sixty-eight pounds; oats, thirty-two pounds; clover-seed, sixty pounds; timothy-seed, forty-five pounds; hemp-seed, forty-four pounds; millet-seed, fifty pounds; buckwheat, fifty pounds; beans, sixty pounds; peas, sixty pounds; hominy, sixty pounds; Irish potatoes, sixty pounds; sweet potatoes, fifty pounds; onions, fifty pounds; dried peaches, thirty-three pounds; dried apples, twenty-two pounds; flax-seed, fifty-six pounds; barley, forty-eight pounds; malt, thirty-four pounds; Hungarian grass seed, fifty pounds. Each and every person violating the provisions of this act shall, before any court of competent jurisdiction, be fined in any sum not exceeding twenty five, nor less than five dollars, and pay the costs of prosecution.

All fines imposed by the provisions of this act shall be collected and paid over to the treasurer of the proper county within twenty days after the collection thereof, for the use and benefit of the common school fund of the township wherein the prosecution was had.

SEC. 2. That the above recited act is hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its passage.

Passed February 27, 1877.

AN ACT

Supplementary to "An act to more effectually provide for locating, establishing, and constructing ditches, drains, and water-courses in townships, and to repeal certain acts therein named," passed April 18, 1874. [O. L., vol. 71, page 124.]

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the words ditch, drain, and water-course, or either of them, as in the act to which this is supplementary, and as used in all other acts amendatory and supplementary to said original act, shall be held and understood to embrace and include, with or without being specially mentioned in the petition for a main or principal ditch, drain, or water-course, any side, lateral, spur, or branch ditch, drain, or water-course, necessary to be constructed, to secure the objects and purposes for which any main or principal ditch, drain, or water-course may be constructed.

SEC. 2. If it shall become necessary, by reason of islands or otherwise, in the establishment of a ditch, drain, or water-course under the act to which this is supplementary, and under any acts amendatory and supplementary to said original act, to construct more than one channel or branch for the discharge or flow of water, in order to accomplish the ends and purposes for which a ditch, drain, or water-course, may be under said acts established and constructed, the same may be done in one proceeding and under one petition; and said trustees are authorized to make all necessary and proper orders to effectually accomplish the same.

Sec. 3. If it shall be found necessary to protect any ditch, drain, or water-course constructed or to be constructed under said act to which this is supplementary, from being washed out by high water, freshets, or otherwise, that any portion of the same shall be rip-rapped or otherwise protected by stone or timber, the said trustees, in their final order, may direct such additional work to be done, particularly describing its kind and character, and the particular place or places, and the sections on which the same shall be done, and by whom.

Sec. 4. This act shall take effect and be in force from and after is passage.

Passed May 7, 1877.

JOINT RESOLUTION

Authorizing the printing and distribution of agricultural reports.

Resolved by the General Assembly of the State of Ohio, That the secretary of state be authorized and required by law, under and in accordance with a law passed March 24, 1860, to provide for the execution and supervision of the state printing and binding, under the joint supervision of supervisor of state printing, and the secretary of the state board of agriculture, to have printed and bound twenty thousand copies of the report of the state board of agriculture for the year 1877, and twenty thousand copies of the report for the year 1878, of which ten per cent. will be printed in German, and the size of the type and mechanical execution to conform to the report of said board for the year 1876; three thousand copies of the report of 1877, and three thousand copies of the report of 1878 to be subject to the order of the state board of agriculture, for exchange and foreign distribution; sixteen thousand copies of the report of each of said years 1877 and 1878 the secretary of state shall apportion among the present members of the general assembly, the number of German copies for each member to be determined by list, to be furnished the said secretary of state by the committee on agriculture in each house, on which list shall be stated the names of members desiring German copies, and the number desired by each; said reports shall be boxed up and directed to the care of the county auditor in the county in which they respectively reside; and it shall be the duty of the said county auditor to notify the respective members within ten days after the receipt of said report, and if not removed by the person to whom directed, or on his written order, within thirty days, then the reports are to be delivered by the auditor to the secretary of the county agricultural society for distribution. The charge for the transportation of the said reports, as well as all the charges for boxes, shall be paid for in the same manner as is or may be provided by law for the distribution of the laws and journals: provided, that said copies shall be printed and delivered to the state binder not later than the fifteenth day of July, 1877 and 1878, respectively.

AN ACT

To compel owners of hedge fences on partition lines and along public highways to keep the same within certain limits.

Section 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for the owner or owners of any hedge fence on a partition line or along a public highway to permit said fence to remain of a greater height than six feet, or of a greater width than six feet, for a longer period than six months, or leave the cuttings from the same on the public highway for a greater length of time than ten days.

SEC. 2. Any person or persons who shall violate the first section of this act shall be liable to the person damaged in any sum not exceeding twenty cents per rod of such hedge fence, and if the hedge be along a public highway, he or they shall be liable to the township trustees of the township in which such hedge is located, in any sum not exceeding fifteen cents per rod of such fence: provided, however, before judgment is rendered it shall appear by affidavit that the party or parties complained against shall have had at least twenty days' notice before suit is begun, from the party complaining that such hedge is unlawful, and that unless cut to a proper height within twenty days suit will be commenced for such violation of law.

SEC. 3. All actions under this act shall be brought upon complaint of the person damaged, before any justice of the peace in the township where the hedge is located, or if the hedge be along a public highway, the complaint shall be made by the supervisor of the road in whose district the hedge may be. All fines assessed against any person for a violation of the act as regards highways, shall be paid into the township treasury and be credited to the road fund.

SEC. 4. This act shall be in force from its passage.

Passed April 9, 1878.

AN ACT

To cure defects in the establishment of ditches.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the collection of taxes or assessments levied or ordered to be levied to pay for the location and construction of any ditch, drain, or water-course laid out and constructed under any law of this state, shall not be perpetually enjoined or declared absolutely void in consequence of any error committed by the engineer or surveyor, or by the county auditor, or by the county commissioners, in the location and establishment thereof; nor by reason of any error or informality appearing on the record of the proceedings, by which any such ditch, drain, or water course shall have been located or established; nor by reason of any error committed by the county auditor, county commissioners, or by the engineer or surveyor, in respect to the letting of uncompleted work, or the levying or assessment of any tax or assessment for the labor and expense of constructing such uncompleted portion, or section, or allotment of such ditch; but the court in which any proceeding is now pending, or may hereafter be brought, to recover, or to declare void the proceedings by which any ditch, drain, or water-course has been located or established, or to enjoin the tax or assessment levied, or ordered to be levied, to pay for the labor and expense aforesaid, shall, if there be manifest error in said proceedings, set the same aside, and allow the plaintiff in the action to come in and show that he has been injured thereby; and the court may, on application of either party, appoint such person or persons to examine the premises, or to survey the same, or both, as may be deemed necessary; and the court shall, on final hearing, make such order in the premises as shall be just and equitable, and may order such tax or assessment to remain on the duplicate for collection, or order the same to be levied, or may perpetually enjoin the same, or any part thereof, or if the same shall have been paid under protest, shall order the whole, or such part thereof as may be just and equitable, to be refunded, the costs of said proceeding to be apportioned among the parties, or to be paid out of the county treasury, as justice may require.

SEC. 2. The act of March 24, 1864 (61 v. 57; S. & S. 321), entitled "an act supplementary to the act entitled an act to provide for locating, establishing, and constructing ditches, drains, and water-courses," passed March 27, 1861, is hereby repealed; and this act shall take effect from its passage.

Passed May 11, 1878.

AN ACT

To prevent the introduction and spread of a cattle disease, commonly known as Texas or Spanish fever, by the importation and introduction of cattle into the state of Ohio, infected with or liable to impart to other cattle said disease, and providing for the punishment of, and the recovery of damages caused by the introduction of such diseased cattle from, owners of such cattle.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for any person to bring into the state of Ohio any cattle infected with the disease commonly known as the "Texas, or Spanish fever," or any cattle liable to impart said fever to other cattle: provided, that this section shall not include common carriers who are not the owners of the cattle.

SEC. 2. Any person violating the provisions of this act, shall be deemed and held to be guilty of a misdemeanor, and, on conviction thereof, shall be fined in any sum not exceeding five hundred dollars nor less than fifty dollars; and shall, moreover, be liable to any party injured by bringing such cattle into the state, in the amount of any loss occasioned thereby.

SEC. 3. Whenever any Texas or Cherokee cattle, liable to impart said disease, shall be brought into the state of Ohio, and any such disease as "Texas or Spanish fever" shall make its appearance within sixty days, and infect other cattle with said disease, that have been on the same highway, common, or pasture ground traveled over by such Texas or Cherokee cattle, such fact shall be deemed and taken as prima facia evidence, in actions to recover damages, that said Texas or Cherokee cattle were infected with the disease known as the "Texas or Spanish fever," and that they did impart said disease, and the owner or owners of said Texas or Cherokee cattle at the time of the bringing of said cattle into the state, and the owner or owners of said cattle at the time said disease shall make its appearance, shall be jointly or severally liable for any damages resulting from said disease.

SEC. 4. This act shall take effect and be in force from and after its passage.

Passed May 13, 1878.

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APPENDIX.

TWELFTH ANNUAL REPORT

OF THE

Ohio State Horticultural Society,

FOR THE YEAR 1878-9.

[ORGANIZED IN 1847, AS OHIO POMOLOGICAL SOCIETY.]

OFFICERS OF THE SOCIETY FOR 1879.

Dr. J. A. WARDER, Cincinnati,	*President.*
N. OHMER, Dayton,	*Vice-President.*
M. B. BATEHAM, Painesville,	*Secretary.*
G. W. CAMPBELL, Delaware,	*Treasurer.*

AD INTERIM COMMITTEE, WITH ABOVE OFFICERS.

L. WELTZ,	Wilmington.
J. J. HARRISON,	Painesville.
G. M. HIGH,	Middle Bass Island.
G. H. MILLER,	Norwich.
GEO. W. TROWBRIDGE,	Glendale.

This report is published as an Appendix to the report of the Ohio State Board of Agriculture (18,000 copies), and a seperate edition for the members of the Society. To secure the benefits of this wide distribution of the report, and save expense to the Society, the printing has to be delayed to a later date than would otherwise be done—the time of the Agricultural Report.—[*Secretary.*]

(For list of members, see last two pages.)

OHIO HORTICULTURAL SOCIETY.

REPORT FOR 1878–79.

For reasons stated on the opposite page, this report is printed in July, instead of December, and hence the record of transactions is from July, '78, to July, '79—the same as several preceding reports.

The year 1878 was a good one for fruit crops generally in Ohio. The apple crop was especially large—like that of the preceding even year, 1876, when the aggregate crop was nearly *thirty million* bushels. Peaches were a fair crop in the northern and eastern parts of the State, and a few sections elsewhere, but many places a failure, as usual. Pears were a moderate crop—not plenty anywhere, and many places none; the same is true of plums and cherries. Berries were quite plentiful, and more were sold and consumed in all our cities than ever before. Prices were low, but with cheap methods of culture the growers realized fair profits, and again planted largely. The grape crop suffered from rot and mildew in many parts of the interior of the State, but a fair crop was realized on most parts of the lake shore and on the islands, from whence the city markets were chiefly supplied with the fruit until late in the season, of very good quality, especially Catawbas. See reports at annual meeting, etc., a few pages onward.

This year (1879) is again an "off year," especially for orchard crops. Apples will be quite scarce, as in '75 and '77; and owing to the unusual severity of the past winter there will be no peaches in the southern half of the State—many of the trees also being killed. Plum trees of the finer kinds, in many localities, were a good deal injured, besides losing their fruit buds—the same is true of cherries. Pear trees are not generally injured, but the fruit was killed in many places by frosts in May and June. In the northern parts of the State there is a fair crop of peaches, pears, and cherries, with some plums and apples. The crop of berries is a full one, but cut short in some places by drought. Grapes are set for a fair crop, but may fail from disease after this time.

HORTICULTURE AT THE STATE FAIR.

The State Fair, at Columbus, the first week in September, 1878, but for the unfortunately rainy weather, would have been counted one of the finest ever held in the State. Almost every department of the exhibition was better filled than usual. This was especially true of the fruit and floral halls. Of the fruits there were more presented than room could be found for; hence some lots were not opened. And for quality and appearance, as a whole, the display was never excelled in the State.

There were five county collections, of 120 to 150 varieties each, embracing all the kinds of fruit in season. That from Ross county was the largest and best, but failed of the premium owing to many of the varieties not being named and labeled as required by the rules. The first premium was taken by Clermont county—A. M. Gatch & Sons; the second by Pickaway county—S. D. Reagle. These parties also gained quite a number of the other premiums on apples, along with a dozen or more other members of this Society, prominent among whom were G. F. Newton, of Millersburg; Hurst & Hurst, Chillicothe; Creighton & Elsea, Lithopolis; J. L. Teal, Perrin's Mills; H. Kellogg & Son, Toledo, and Saml. Barr, Amanda.

Of peaches, plums, and quinces the finest samples were by Hurst & Hurst, of Chillicothe; though several peach premiums went to Painesville and other places, and A. M. Gatch & Sons, of Milford, gained two premiums on plums, and one for second best assortment of peaches. Of pears there were not less than 140 entries. The display was said to be the largest ever witnessed in Ohio, and most of the samples were of fine appearance—especially those of Mr. Ohmer, who naturally carried off a majority of the premiums; though Mr. Weltz gained that for largest collection, and ten other persons won smaller honors.

The time of the fair was a little too early for the northern grapes to be ripe, hence several good growers from the lake region did not exhibit. G. M. High, of Middle Bass Island, had the largest and best collection, and gained thirteen premiums out of twenty-five; the rest going to Delaware, Dayton, Lancaster, and Perrin's Mills. The display was a very fine one, though not so large as at some former fairs.

Floral Hall was well filled and tastefully arranged, for which much credit was awarded to Mr. Weltz, the superintendent, and to Mr. Underwood, both of whom devoted much time and labor to the arrangement. Mr. Weltz also exhibited a collection of evergreens and palms; and Mr. Underwood made the finest display of plants and flowers. R. G. Hanford & Son, of Columbus, made fine displays of roses, rare plants, and cut flowers, and Bachelder & Thorp, of Cleveland, gained large honors for choice roses, green-house and other plants, including a number of new seedling geraniums of much beauty. For assortments of cut flowers and roses, premiums were awarded to Leeds & Co., of Richmond, Indiana; and for amateur collections to Wm. McKellar, of Chillicothe, and about a dozen people of Columbus and vicinity.

The display of garden vegetables was very good, though not extensive for a State Fair, and the exhibiters, as usual, were too exclusively residents of Franklin county. Mr. Clark, of Elyria, and one or two others from a distance, easily gained several premiums, but the majority were awarded to A. W. Livingston & Son, and W. F. Barr, of Reynoldsburg. Their assortments of well-grown vegetables were sources of much interest and instruction to the public.

STATE FAIR MEETING OF THE SOCIETY.

A meeting of the Society was held, as usual, on Wednesday evening during the fair, mainly for the purpose of inspecting such new or rare fruits as might be presented for the purpose, or were found on the tables at the fair. The number of such fruits was not as large as usual, and owing to rainy weather the attendance also was small. President Warder was kept away by impaired health and the Rocky Mountains, and Mr. Campbell was absent at Paris. The White grapes, Martha, Lady, Purity, and Elvira were exhibited, tasted, and discussed, but nothing new elicited. It was the prevailing opinion that Martha and Eva were not identical; that Lady was valuable for earliness and freedom from disease, along with good quality, but the clusters are too small for a market grape. Purity is still smaller in berry and bunch, but of fine quality, and may be valuable as an amateur fruit, if the vine is sufficently vigorous and healthy. Elvira is thought to be too late for most parts of Ohio, and not of good enough quality for a table grape. A grape of the Isabella class was exhibited at the fair as a new and valuable seedling, and awarded the premium as such, grown by F. Nuding, of Circleville. The fruit was of fair appearance and good quality, and the variety deemed worthy of trial and further observation. Mr. Julian was requested to investigate it further and report.

A number of apples were presented for names, and several as new seedlings—the latter mostly winter varieties, and hence their merits could not be judged of. It was requested that such should be presented at the annual meeting of the Society. No premium was awarded at the fair for new seedling apple. Several nice peaches were presented, and one claimed to be a new seedling was honored with a premium. It was from Miami county, but the name of the exhibiter and description of the fruit, as well as notes of several others, were accidentally lost by the secretary.

A new seedling tomato, named Alpha, produced by Frank Ford, of

Ravenna, was presented, and said to be specially valuable for its earliness. It is also of fair size, good color, and fine texture—promising to be of value, and recommended for trial.

PLACE OF THE ANNUAL MEETING.

Mr. Ohmer, in behalf of the Montgomery Horticultural Society, invited the State Society to appoint its next annual meeting to be held at Dayton. He promised that the Society there would see that a suitable hall was provided, and other conveniences furnished for the meeting, and he felt sure that the hearty co-operations of the citizens might be relied on to make the meeting agreeable and useful. Members present said they felt assured that whatever Mr. Ohmer promised for himself or the Montgomery Society, might be implicitly relied on; so, on motion, it was decided to accept the invitation, and hold the annual meeting at Dayion, the first or second week of December, as the committee might arrange.

THE NORTHERN OHIO FAIR (CLEVELAND)

Was held the same week as the State Fair, and, like it, encountered disastrous weather after the opening day. The exhibition, however, was a very full and attractive one, and reflected much credit on its managers.

The display of fruits was quite large, but not equal to some former occasions, and owing to the bad weather some difficulty was found in securing efficient action of awarding committees. The floral display, as usual here, was very magnificent. No where else in Ohio is it possible to bring together such an array of rare and finely grown house plants, when the wealthy amateurs as well as the commercial florists combine to make a show, as they do on these occasions. The only serious fault, and one which detracts greatly from the pleasure of visitors, is the rule by which the names of exhibiters are forbidden to be attached to their articles until after the premiums are awarded, and that is usually near the close of the fair. It is time this old fogy rule was abolished, as it has been done elsewhere.

The next fair, at Cleveland, is to be held the first week of September, 1879, one week later than the State fair. The gardeners, florists, and fruit growers of that region are preparing for another fine display, as these fairs are in a measure serving the purpose of a local horticultural society.

ANNUAL MEETING OF THE SOCIETY AT DAYTON, DECEMBER 4, 5, 6, 1878.

This meeting was a very pleasant and instructive one. The attendance was not very large, hard times preventing many going from distance, and rainy weather keeping others at home, still there was no obvious deficiency, and the discussions, essays, etc., gave evidence of the continued progress of the Society in usefulness and ability. Complete arrangements had been made by the local committee, and a programme, with list of topics and speakers had been printed, which with slight alterations was adhered to, as follows:

PROGRAMME AND LIST OF TOPICS.

1. Arrangement of fruits, etc., for exhibition.
2. Dinner with Montgomery Society, at residence of R. W. Steele, Esq.
3. Organize at the hall; appointment of committees.
4. Report of Secretary and members of ad interim committee.
5. (Evening). Address of welcome by N. Ohmer, and response by President Warder.
6. President's annual address, followed by an essay on rural cemeteries, by R. W. Steele, of Dayton.
7. (Second day). Further reports, on crops, etc., of the past season.
8. Reports from county societies.
9. The catalpa tree, its economic uses and value, by E. E. Barney, of Dayton.
10. Horticulture in France, with notes on the vineyards and phylloxera, by G. W. Campbell, of Delaware, Ohio.
11. Grape culture in Ohio, by M. B Bateham and others.
12. Pear culture and causes of failure, by N. Ohmer.
13. Small fruits, their increasing use and commercial importance—discussion.
14. Rules for judging fruits at exhibitions, by Dr. J. A. Warder.
17. Lecture on forestry, by Prof. Koch, of Toledo.
18. Lessons of the peach crop—discussion.
19. Report of committee on fruits, with discussion.
20. Protection to orchards by timber belts, by Dr. Warder and others.
21. (Second evening). Notes of a trip to the Rocky Mountains, by President Warder.
22. An essay on native vines and their culture, by Miss Carrie Brown, Dayton.
23. The civilizing influences of horticulture, by C. W. Pinkham, Loveland.
24. Ornamental planting around school-houses, by Leo Weltz, Wilmington.
25. (Third day). Lecture on the climatic effect of forests, by David D. Thompson, Cincinnati.
26. Our apple crops, how can their alternation or failure be prevented?—discussion.
27. Is plum culture a success in Ohio? by M B. Bateham and others.
28. Strawberries and raspberries—discussion on new varieties.
29. Election of officers. Closing resolutions.
30. Visit to the Soldiers' Home.

PROCEEDINGS OF THE MEETING.

The City Hall being the place of meeting, members gathered there as they arrived, and occupied themselves in friendly greetings and arranging fruits on the tables, until nearly noon, then, on invitation, proceeded to the spacious residence of R. W. Steele, Esq., where the members of the Montgomery Society were holding their regular monthly meeting, and a bountiful pic-nic dinner was shared by the whole assembly, numbering about two hundred, the tables occupying three large rooms. This was an exceedingly pleasant introduction to the three days of social and intellectual entertainment which followed.

Proceeding to the hall, it was found handsomely decorated with evergreens and flowering plants about the platform, with the word "welcome" above. On tables were numerous collections of handsome apples, with a few pears and grapes, and specimens of potatoes.

About 2 P. M. President Warder called the meeting to order, and announced the following committees:

On Fruit Exhibited—Leo Weltz, J. J. Harrison, A. Furnas.
On Vegetables—W. C. Pinkham, John Ewing, John Comly.
On Flowers—S. S. Jackson, J. W. Vestal, P. H. Murphy.
On Shrubs and Evergreens—F. Pentland, S. K. Moore, E. W. E. Koch.
On Membership—N. Ohmer, J. S. Broadwell, William Kramer.
On Business—George W. Campbell, G. H. Miller, M. B. Bateham.

The President said he felt pleasure in announcing that several prominent members of the sister society of Indiana were present; among them was Dr. Allen Furnas, who was the accredited delegate from that society to this meeting. He had no doubt that a like delegation would have been present from the Michigan Pomological Society if it were not for the fact that their annual meeting is going on at the same time with ours.

GREETINGS FROM INDIANA AND MICHIGAN.

Dr. Furnas expressed to the meeting the cordial greetings of the Indiana Society, and the pleasure he felt in being present, a privilege that he had been permitted to enjoy on one or two former occasions of this kind.

At a later hour the following dispatch was received from the Michigan Society, and a suitable response returned by President Warder:

PAW PAW, MICHIGAN, *December* 4, 1878.

President Ohio Horticultural Society:

The Michigan Pomological Society sends cordial greeting. The best meeting ever held by this Society is now going on at this place. Fraternal greetings have also been exchanged with the Kansas Horticultural Society.

T. T. LYON, *President.*

The report of the Secretary being in order, Secretary Bateham said he had no formal report to make, as all the members of the Society had received the printed report which contained the transactions of the Society and of its committee up to last July, since which time there had been little done worth reporting. He then spoke of the horticultural department of the State Fair as being chiefly the work of members of this Society; also the meeting of the Society at Columbus, an evening during the fair, but which was thinly attended owing to the rainy weather, but made examination of a number of fruits, some of them promising new varieties. He explained, for the benefit of non-members, why it was the annual reports of the Society are printed in July instead of December or January. (See page 2.)

THE SEASON AND FRUIT CROPS, 1878.

The *ad interim* reports from different sections of the State were now given, and contained many facts of interest to fruit growers, but inasmuch as another season and its crops will intervene before these reports can be published, it is thought best to condense them, only giving such portions as seem of most value.

Mr. Weltz, reporting for Clinton, Fayette, and Ross counties, said the year 1878 would long be remembered as one of plentiful fruit crops, though a frost in May injured the strawberries and grapes, and the pears in most localities. Strawberries, however, gave a fair crop, and prices were quite low. Raspberries also were plenty and cheap. Blackberries have done well where not affected with "red rust," but this disease is becoming very troublesome. The Snyder and Taylor varieties not affected as yet, but the fruit is lacking in size. Currants were a fair crop, and sometimes pay well, but not when cherries are plenty as they were this year. La Versailles and White Grape are the best currants for market. Early May cherries were abundant, and brought fair prices. May Duke and Reine Hortense also bore well. Many cherry trees were injured by drought and cold winter several years ago. The robins are the greatest obstacle to cherry culture. The law which now protects them and English sparrows should be amended so as to allow of their destruction. We had a fair crop of pears, and good demand for the fruit. Have had but little blight, and only where the ground was highly cultivated. Have concluded to *mulch* instead of cultivate the soil, after the trees have been set three or four years; and shade the trunks from hot sunshine. Dwarf pear trees of certain kinds do well in good soil, if well cultivated—especially Duchess, Beurre d'Anjou, Louise Bonne, and Bousock. Not many peaches in this district, except in Ross county, and in Highland and Brown. Plums were especially plenty and fine, nearly all kinds doing well, with but little injury from curculio. The Wild Goose was the first in market, and sold at $2 to $3 per bushel; common Damsons $1, and Shropshire Damsons $1.25 to $1.50. Many of these were shipped from Ross county to Baltimore. Apples very abundant and fine, but prices too low for any profit. Many fed to stock, and cellars well filled with apples and cider, expecting a good time after resumption in January!

Mr. Harrison, of Painesville, reported for Lake Shore district, east of Cleveland: Apple crop over-abundant, price too low for any profit, and trees will be injured by overbearing. Pears a light crop, with some blight. Plums set a full crop, but hot and dry weather caused leaves to fall before the fruit was mature, in many cases, so that quality was poor, and the trees liable to injury by the winter. Peaches were plenty, and of fair quality where trees were healthy and cultivated; but hot weather and drouth injured much of the fruit. The latest varieties were generally the most profitable. All of good quality sold at fair prices. Several of the new early sorts—Amsden, Alexander, Beatrice, etc.—fruited this season, and promise to be valuable; all of them somewhat earlier than Hale, but like it, seem liable to rot when ripening, if on flat or clayey ground. Several new seedlings in Lake county also ripened very early, and promise to be valuable. They will be looked after another season. Strawberries and raspberries were plenty and cheap; only the early blossoms of strawberries killed by frost. Currants plenty where the worms were kept from destroying the foliage.

Mr. Bateham spoke of the grape crop along the lake shore. In the eastern section, especially on sandy lands, a good deal of injury from mildew and rot, except on young vines. Not many profitable vineyards at this time east of Collamer and Euclid, in Cuyahoga county, especially of other than Concord variety. There was a good crop of Delaware and Catawba, with others, on best clay soils about Collamer and Euclid, also a few miles west of Cleveland; about half a fair crop at Dover Bay, and rather less at Avon and other points along the shore towards Sandusky. Farther west, around Toledo, etc., the crop of Concords was good and profitable; not many others grown that way, except on the Islands. He had conversed with several growers from the Islands, and they represented the crop there as quite fair and well ripened, the fruit selling for fair prices, though some injury was done by mildew and rot in quite a number of the vineyards.

G. H. Miller reported for Muskingum and eastward: Apples very abundant and fine, especially where trees were not too old and the codling moth had been kept in check by the use of swine or sheep in the orchards to eat up the fallen fruit during summer. Peaches were also a fair crop in most localities, and several of the eastern counties shipped large quantities of peaches to Baltimore to be used there for canning. The prices obtained were eighty cents to one dollar per bushel net.

From one railroad station in Muskingum county (Claypool) 19,187 bushels were shipped. We had a good crop of plums, especially of the blue Damson, bringing from seventy-five cents to one dollar per bushel; some of the finer plums higher prices. The Wild Goose bore well, but the fruit not much esteemed owing to its astringent flavor. The Newman is of the same character, not quite as good. Pears are not much grown owing to failure of trees from blight; the crop was sufficient for general home use. Strawberries were a good crop notwithstanding the early blossoms were killed by frost. The favorite varieties with the market growers are Wilson, Chas. Downing, Kentucky, and Monarch of the West, and, on its favorite soils, the Jucunda. Grapes were injured by the late frosts in most localities; in others the crop was fair. General improvement in horticulture is noticeable, and would be quite general but for the stringency of financial affairs.

BERRY CULTURE IN BELMONT COUNTY.

Belmont strawberries and raspberries are quite noted in the markets of Columbus and several other cities of Ohio, also Wheeling and Baltimore. Mr. G. H. Miller attended the June meeting of the Eastern Ohio Horticultural Society, at Barnesville, as delegate of the State Society, and gives the following report of the berry culture and trade in that vicinity:

"There are about fifty acres of strawberries around Barnesville. John Scales is the largest grower, having about ten acres, and a crop of about one thousand bushels. His method of culture is the usual routine. Mr. John Hays practices a rather novel method, which might be termed annual renewal system. Immediately after the crop of berries is gathered, or as soon as suitable weather, he carefully takes up enough plants to reset the ground, then plows, harrows, and replants the same ground; afterwards cultivates in the usual way, and mulches late in the fall. The next season, after the crop is gathered, he plows and plants again in the same way. He grows largely the Wilson, and his crop was as fine as I ever saw of that variety. Mr. Scales grows Jucunda, Wilson, Chs. Downing, and Kentucky. His best patches of Jucunda, Wilson, and Downing yielded over two hundred bushels per acre—Kentucky something less—and his whole crop was over one hundred bushels per acre. Some growers averaged only half that amount. Fancy strawberries, like the Jucunda, sold readily in the city markets at higher prices than last year, while the common sorts were lower and of slow sale, except the earliest. The principal markets are Columbus and Wheeling, but many berries are sold at smaller places—Steubenville, Bellaire, etc.—and some fancy lots went to Baltimore, Cincinnati, Louisville, and Chicago, with satisfactory results. I am indebted to Jas. V. McLane and Wm. K. Tipton for most of these items and statistics.

"The prices realized for strawberries the past season, after deducting freight and commission, were, for Wilsons, $1.50 to $4 per bushel—averaging $2; Jucundas, $2 to $5 per bushel—averaging about $4; Chs. Downing and Kentucky, averaging about $3. The fruit is all graded, and packages marked Nos. 1, 2, and 3, and sold accordingly. The crop of strawberries last year was about 20 per cent. more than the year previous, of raspberries about 50 per cent., and blackberries 75 per cent. more.

"The varieties of black cap raspberries are mostly the Mammoth Cluster and Doolittle, but the Gregg has been fruited here to some extent, and will be planted largely hereafter, as the berries of this variety sold for about one-third higher price than the others, and the yield is full as great. Of red varieties, the Philadelphia is the most grown; then Turner, Herstine, etc. The prices of black-caps ranged from $1 to $3 per bushel; reds, $2.50 to $5. Blackberries ranged from $1 50 to $4—average, $2."

AD INTERIM REPORT—BY N. OHMER.

MEETING NEAR LEBANON.

In the early part of last June, during the strawberry and cherry season, Leo Weltz and I attended the June meeting of the Warren County Horticultural Society, at the residence of D. P. Egbert, two miles from Lebanon. There were present quite a large number of ladies and gentlemen, members, and invited friends.

At noon all were invited to dinner, which, like all these dinners, was first class in every respect. After dinner, the meeting was called to order by the President, Mr. John T. Mardis, and continued in session for about two hours. The discussion was of a rambling nature; they having Weltz and I to pump, made good use of their time. There was upon the tables a very fine collection of strawberries, cherries, early vegetables, and cut flowers (your humble servant showing some ten varieties of strawberries); as a whole, a fine display, and very creditable to the society. If all the meetings of this local society are like this one, the Warren county society is a success. We left the place well pleased with our visit to our Warren county neighbors.

MEETING AT COLUMBUS.

A few days later I attended a meeting of the Columbus Horticultural Society, held in the agricultural rooms, in the State capitol. This society is an old one, which at one time was quite active, and did much good. It has, however, been dormant the last few years, having an accumulated fund on hand amounting to $5,000 or more. What to do with this money is a question easier asked than answered. A few of the old members, headed by its President, H. C. Noble, Esq., very wisely concluded to attempt to reorganize the old society, by calling a meeting and offering liberal premiums for the best quality and display of strawberries, cherries, and cut flowers. This call was responded to by a large attendance, and a magnificent show of strawberries and cherries, from various portions of the State.

The display of strawberries, cherries, and flowers was very large and fine, though rather late in the season. The attendance of ladies and gentlemen was large, also; all seemingly enjoying themselves feasting their eyes on the good things on the tables, at which they could look, but not eat. This was in the afternoon. In the evening there was a still larger attendance, and after feasting the eyes again, an organization was effected by the President, who, after having stated the object of this meeting, introduced our President, Dr. Warder, Secretary Bateham, and your humble servant, each of whom responded by delivering an off-hand speech. The remarks were instructive and well received. Some discussion followed, and after adjournment all took another look at the good things upon the tables, then by invitation (cream and sugar having been liberally provided)—well, I need not tell you what followed, but we lightened those tables.

I could not help but think that if our State Society or the Montgomery County Horticultural Society had that $5,000, how much good they could do with it. President Noble expressed himself as quite anxious to awaken an interest among younger members, who would get up and keep up an active horticultural society, this meeting having been mainly called for that purpose. It is to be hoped they may be successful in the accomplishment of much good for their city and county.

MEETING AT MANSFIELD.

By special invitation, Mr. Bateham and I attended a meeting, during the raspberry season (July), of the Richland County Horticultural Society, held in the court-house, in Mansfield. The attendance was not of the character of the other meetings we had attended. There were no ladies present—all men—and many did not even have their store-clothes on, but came for business, and apparently business only. This, of course, was all right, but not the way to make a success of a horticultural society.

The display of raspberries was very fine. A few dishes of strawberries, not first rate, were there, principally to show how late they could be had. As a whole, the show of fruits and vegetables was quite creditable to the growers and enterprise of this famous fruit region.

President Palmer called the meeting to order, after which the various kinds of fruit and their culture were practically and intelligently talked up, as might be expected in such a body of practical men. The meeting was a success, as far as it went; but I could not help thinking what a grand horticultural society might be organized. and how much good i could do, if the large body of men engaged in fruit growing in and around the city of Mansfield only willed it.

IN LUCAS COUNTY.

The next and last meeting I attended in an official capacity was a meeting of the Lucas County Horticultural Society, in October, at the residence of Wm. Van Fleet, near Waterville, some sixteen miles from Toledo. Mr. Bateham was also present. This meeting reminded me of home. The attendance of ladies and gentlemen, both young and old, was large. They came pouring in, probably from every township in the county, bringing their well filled baskets, the contents of which were spread upon tables to which all were in due time invited. The dinner, of course, was good, as all such dinners are, and accompanied with much social enjoyment

After dinner an organization was effected by President F. Granger, and topics of timely interest to fruit growers were discussed, and several able essays were read, all seemingly taking a lively interest in the proceedings. I could not help complimenting the members as they deserved, for the interest manifested in this organization, being the best meeting of the kind I had attended this season.

The display of fruits was not as good as it should have been, considering there were so many fruit growers in attendance, but the meeting was a success every other way.

INTERCHANGE OF SOCIETY VISITS.

There is a feature in the management of local horticultural societies practiced by the Montgomery county and the Richmond, Indiana, society, that I think is worth mentioning in this report, namely: the annual visitation, alternately, of one society to a meeting of the other. It has been practiced by these two societies for the last six years, and has resulted in much good to both societies. The last visit was by the Montgomery society to their Hoosier friends, on the first Saturday of last September. Special rates having been obtained from the railroad company, about fifty (fully one-half ladies) of the most enthusiastic members of the Buckeye society boarded the train for Richmond, at 8 o'clock A.M., arriving at Richmond at 10. On our arrival we were invited to carriages provided for our party, and taken to the magnificent home and grounds of Mr. Forkner, about one mile from the city. We were there welcomed by a large number of ladies and gentlemen, members of their society, and at once invited to make ourselves at home, and a large portion of the Richmond Society being Friends (commonly called Quakers), mean what they say. There were at least three hundred persons present, the larger portion ladies. In due time all were invited to a magnificent dinner, spread upon tables under the shade of native forest trees.

After dinner President Bulla called to order, and gave us an address of welcome, which was answered by our President; then the regular order of bussiness was proceeded with.

The display of fruits, flowers, vegetables, and farm products at this meeting was superior to that of a majority of our county fairs. Our Quaker friends were apparently well pleased with their guests, and I know we were more than well pleased with the manner in which we were entertained.

Next year it will be our turn to entertain our Hoosier friends. One can hardly conceive how stimulating these meetings are to the members of each of these two societies.

Mr. President, to wind up my report, allow me to say that abundant as were the fruit crops this year, and sold at apparently ruinous prices, they nevertheless paid the grower some profit. To sum up my own experience, I realized in dollars of the daddies, net, after paying all expenses of picking, packing, and commission, for strawberries, $1.90 per bushel, raspberries, $2 00 per bushel, blackberries, $2.00 per bushel. Of pears I sold seven hundred bushels, Bartlett, $1.00 per bushel, Seckel, $1.30 per bushel, Flemish Beauty, $1 50 per bushel, Louise Bonne, $1 00 per bushel, Duchess, $1.75 per bushel, Lawrence, and Beurre d'Anjou, $2.00 per bushel.

Apples were so abundant everywhere that I could do nothing with my summer varieties. They were allowed to fall and be carried away, or go to waste. However, I did better with my winter varieties. I sold about fifty barrels of Rambos at $1.50 per barrel, without the barrel, and some Baldwins at the same price.

WEDNESDAY EVENING SESSION.

There was a goodly attendance of ladies and gentlemen in the hall this evening, and all seemed interested in the proceedings. Mr. Ohmer, as President of the Montgomery County Horticultural Society, delivered the following

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the Ohio State Horticultural Society: It is with pleasure that I take this opportunity of tendering to you a hearty welcome to the Queen City of this great Miami Valley, a region famous for its beauty, and the wealth and intelligence of its inhabitants. You have come here, my friends, as a body of intelligent and practical horticulturists, to deliberate and discuss that which is best for the advancement of horticulture in its various interests.

This Miami Valley owes much to you for the many lessons taught by you in the publication of your deliberations, but more especially to the untiring energy of our distinguished President, who, as you all know, has spent almost his entire lifetime and money for the very love he has for the profession, for ourselves, for the whole people, not locally, but nationally. It is through the untiring industry, intelligence, and liberality of such men that this valley has been made to bloom and fill the land with the best of fruits and choicest of flowers, that makes the intelligent citizens of the Old World look upon us with admiration. It is to such men as Dr. Warder, Longworth, Ernst, and others that I might name, to whom we owe tribute for the lessons taught us when most needed.

It is now some fifteen years since I became a member of this association, since which I have met annually with you, and I can say that the meetings have been to me a great source of pleasure and profit. The members of the Montgomery County Horticultural Society, the citizens of Dayton, as well as your humble servant, feel highly honored to have you meet among us, for if there is an association in the land that is noble in its pursuits, that has no secrets nor patent rights, that works continually to instruct those that need instruction in the best varieties and mode of culture of the fruits, flowers, and vegetables suitable to our soils and climate, and that merits the good will and support of the community at large, it is one of this character.

Not wishing to detain you, I will close my remarks by hoping that your deliberations will result in much good, that you may enjoy yourselves while among us, so that you will consider your time here well spent, and make a good report of this meeting to your constituents.

Again, gentlemen, in the name of the Montgomery County Horticultural Society and the citizens of Dayton, I tender you a hearty and candid welcome.

Dr. Warder responded briefly, thanking Mr. Ohmer, the Montgomery County Horticultural Society, and the citizens of Dayton for the cordial welcome extended. He paid a neat tribute to Dayton as a hospitable city and center of horticultural intelligence. He also spoke of Mr. Ohmer as an eminent horticulturist, and eulogised his work as President of the County Society.

Dr. Warder then proceeded to deliver the

PRESIDENT'S ANNUAL ADDRESS.

Fellow Members: In our capacity as the Ohio State Horticultural Society, ourselves and our officers have again reached that interesting point in our history, called the *annual meeting.*

It is said corporations never die; but at certain intervals, longer or shorter, as these may have been made by the organic laws under which they exist, sooner or later there comes a time of *suspended animation;* a halt is ordered in their affairs, when the servants are expected to give an account of their stewardship, and the sovereigns, their masters, reorganize the body by holding a new election. At such times they either select new men to serve them, which is often the better course, or they again place their old officers on guard, exacting from them continued service.

To a great extent, in former years—too great, perhaps—you have pursued the latter policy; and though it may be in very bad taste for one of themselves to make suggestions as to your action in this matter, you will excuse one who has long endeavored to serve you, for advising a change in this respect. Other somewhat similar organizations have found that the principle of *rotation,* more widely distributing the honors and the labors of the management of their affairs, has enabled them to extend the interest among the members, and to secure the best services from the best men in their associations. For the advancement of our highest interests as a society, and for the sake of the progress of horticulture in our noble State, the suggestion is now made to you, that at this particular pause in our life it may be well to consider the propriety of changing the policy of previous years, in such a manner as to imitate that of our sister societies in this regard.

But to return to the duties of the hour. It is presumed that your officers are now duly prepared to render their annual reports. The Secretary will give you, as usual, a brief rehearsal of the doings of the society during the past year. It is believed that he will convince you that we have not existed in vain, but that through his efforts, ably seconded by energetic members of the Ad Interim Committee and others, an interest in behalf of horticulture has been aroused in many parts of the State, and that the people at large have been benefited by the efforts made in their behalf.

Your trustworthy Treasurer, though absent from us for some months in the service of the Nation, will nevertheless present you with an account current that will exhibit the amount and sources of our small revenue, and he will also indicate on his balance sheet the manner of the expenditures which have been made by us in the interests of horticulture.

From the same individual we shall also hope to hear, at another time during this meeting, a most interesting report relative to the status of the art and practice among our brethren in La Belle France, and as collected from other lands at the Great Exposition of 1878.

The several members of the *Ad Interim Committee* will also inform you in regard to the observations they may have made in the various departments under their charge during the current season, and, indeed, all that may have been observed by them during the interval that has transpired since the Ravenna meeting last December.

And now your retiring President feels called upon to present to you a review of our present condition in horticulture, taken in its widest sense, and, perhaps, to make some suggestions for your action in the coming years, which, he trusts, will continue to be, as they have undoubtedly been in the past, years of usefulness to the people of this great commonwealth as well as to ourselves.

At the best, and with all the skill which may be brought to bear upon our pursuit, we are but as grass, subject to the meteorological influences that surround us. Winter's cold blasts and summer's scorching heats, the excessive rains, and the parching drouths, the early frosts of autumn and the late chills of the vernal season, all alike hold our fortunes in their grasp, and favor or afflict us at their own sweet will; they are wholly beyond our reach to control. And yet, though we be powerless, there is One who ruleth all things well, and to whom we may safely trust the arrangement of all the details of His universe, even to the directing of the unstable winds. Hath He not promised that seed time and harvest should not fail to His children, and said he that may sow in tears shall reap in joy! After the flood He assured us that, "while the earth remaineth seed-time and harvest, cold and heat, and summer and winter, and day and night, shall not cease."

RECORD OF THE SEASONS.

The past winter was one of unusual mildness, and was not marked by any great depression of temperature. Hence, we did not sustain the usual losses by severity of the cold; indeed, there were some rather surprising escapes among plants that are ranked as extra tender. In the spring time many bulbs were found in perfect condition, including even the tropical *tuberose*, which had lain in the garden bed all winter.

The fruit-buds of all kinds seemed to be perfectly preserved; but in some species they were not so abundant as usual.

Though part of the winter was so very spring-like that the croakers predicted a premature advance of vegetation, the chills more appropriate to that season continued to check the vegetative process long after the *vernal equinox*, and winter lingered almost to the lap of May; the weather continued cool and wet, and the result was a rather backward season.

One of the curious effects of the rains that prevailed during the blooming of the apples, was a literal *wash out* of the pollen from many of the flowers. This happened to be particularly observed, because one of our scientific students of pomology, Professor Beal, of the Michigan Agricultural College, whom we had hoped to see here with us, had desired to have pollen collected for the sake of experiments in cross-fertilization. Repeated attempts to find the flowers in the proper condition to yield the fertilizing cells were rendered nugatory, and serious apprehensions were felt that we should not have any fruit. The trees were closely watched during the next two weeks, nor was any encouragement derived from the phenomena observed. The unfertilized germs literally covered the ground, and all seemed to have fallen; but, thanks to the abundant provision of blossoms, enough had been set, during the brief half hours of sunshine, to yield a fair crop of fruit on many varieties of the apple. A similar result was observed in the forests, which were almost destitute of mast in the oaks, beech, walnuts, and ash.

The effects of the cool and hurried springtime were made manifest, during the coming summer, in the unusually luxuriant crops of grapes and cereals, and the success with transplanted trees proved very satisfactory.

During the æstival period an abundant rain-fall, with unusual heat, rendered the season decidedly tropical, and exerted a peculiar influence upon many plants, while it also proved almost disastrous to the farmers in many places by its interference with harvesting operations. The aggregate amount of heat was enormous, and the continuous character of the heated term, without the usual alternations, made one think of subtropical regions, all of which was good for the great staple, king corn, that has since yielded his golden treasures to the careful husbandman.

The autumn has been delightful; the days were by no means "the saddest of the year," if they be judged by the bright skies and balmy breezes with which they have been accompanied, enabling the industrious and provident to make all the arrangements necessary in preparation for another winter, which can hardly be as temperate as the last. Frosts did not occur to destroy the most tender vegetation on the banks of the Ohio until toward the end of October.

Mankind has been called the grumbling animal, and some of the species, it must be confessed, seem never content unless in *discontent*. And now, with all our blessings and abundant store, the complaint comes up that prices for our produce are so low as not to be remunerative in proportion to the investments made in their production. If caught in such a predicament we must abide the result, but may amuse ourselves by guessing at the causes. One says it is the result of the contraction of greenbacks. But are they contracted? And have we not the old-time chink of the old-fashioned money to remind us of the days of our youth, and to show to our sons, who have never known the *heft of a silver dollar*, and who now, for the first time in their lives, have the opportunity to become acquainted with *real money*, instead of its paper promise, that has been so long unfulfilled—a mere *fiat* of the Government?

Pardon this digression, but the question of currency is of the deepest concern to all citizens, and not without interest even to the poor gardener. No! the depression in prices may with greater propriety be attributed to *expansion* than to contraction—to the expansion of the earth's rich harvests, that have resulted in the over-production of all things, taken in connection with the general shrinkage in values of all commodities, which ever occurs when there is more material thrown upon the market than the said market needs. The so-called hard times will always bear heavily upon those articles that are looked upon in the light of luxuries, and to many people that is precisely the position of a large part of the products of horticultural labor. Hence these products must be among the first to suffer from the depression.

NEW FRUITS.

The past year has not been behind its predecessors in this evidence of progress. New fruits have made their appearance in most of the species cultivated. Of these we may hope to hear more full accounts in some of the ad interim reports that will be presented at this meeting. The early peaches that have recently made their appearance constitute a somewhat remarkable phenomenon. One correspondent in Kansas reports nearly a hundred varieties that have originated in his neighborhood. Of course but few of these will ever enter into general cultivation. Of new apples less have been seen than usual, but among those of comparatively recent date, the "*Wealthy*," a Minnesota seedling, is proving itself as a handsome autumn fruit of very good quality, and with a thrifty tree, *perfectly hardy*. Among the many new strawberries, Ohio boasts of the Forest Rose and the Glendale, while Pennsylvania has produced the Sharpless. But of all these, and of raspberries, we hope to hear from several of our friends at this meeting. A choice new gooseberry, called *Late Emerald*, was exhibited at Rochester last June, before the American Nurserymen's Association, by W. L. Ferris, of Poughkeepsie, New York. The plants of the *Hudson* growing in the nursery of H. E. Hooker, at Rochester, appeared to be very satisfactory as to health and productiveness. The fruit is large, and resembles the English varieties.

New Grapes continue to make their appearance. In these the wonderful results of Mr. J. B. Ricketts take the lead. The *Highland*, as figured in a late number of the *Agriculturist*, seems to be one of great promise. Many of you, no doubt, have seen specimens, or at least notices, of Mr. Hubbard's new white grape, the *Prentiss*. Mr. Campbell's report will probably give us reliable information on this head, and the consideration of their prospective value is left for his better judgment.

HORTICULTURAL ADVANCES.

Despite the varying seasons, the hard times, and every other source of discouragement, it remains apparent to all that there is a largely increased and increasing taste for horticulture among the people. This may be seen in the frequency of window-gardening, by which we are greeted and cheered on every hand; and this is all the more welcome because within the reach of every class of society; the cottager may enjoy it as well as the millionaire; the occupant of a tenement-house or of a log-cabin may thus enjoy flowers and plants, and show his love for them, as well as the occupant and owner of the palatial residence and its wide parks and rich gardens.

Ornamental gardening is largely on the increase; all through the country, and not merely on the suburban villas near the great cities, but on the farms, we may see the neat lawns, the shrubberies, the shade-trees, and the avenues, which are so many indices of a greater refinement in the tastes of the people than existed formerly. The flower gardens are more general and more gay, from the greater care bestowed upon them, and from the increased knowledge of what to plant and how to manage them.

VEGETABLE GARDENS.

Would that, with equal truth, it might be said that our good people on the farms, generally throughout the country, had fully aroused from their lethargy in respect to the vegetable gardens! There is, however, even here, some progress, but it must be confessed also that there is room for still greater advances, which will redound to the comfort, health, and happiness of this large class of our people. The vegetable garden may be made to contribute in a very considerable degree to the supply of the most healthy nutriment. Every farmer should not only have a good kitchen garden, and abundant fruit for himself, but he should make allotments of ground for his tenant workmen also, and encourage them by his example, his advice, and his instruction, to reap the benefit of these healthful contributions to their tables; the land thus occupied will not be missed from the area of the farm, while the increased comfort, health, and contentment of the workmen and their families, will attach them more firmly, and make them more faithful to their employers.

These views will probably be more forcibly presented to you in the paper, from an able hand, on the *Civilizing Influences of Horticulture.*

TREES AND FORESTRY.

The function of our presiding officer could hardly be fully performed, were he to omit some reference to *trees and tree-planting.* It is, indeed, a matter for congratulation that greater attention is bestowed to this matter. This may be seen in the avenues that are appearing even along some of our highways, where the weary pedestrian, as well as the luxurious charioteer, has reason to bestow his benedictions upon the thoughtful charity of the men who provided the refreshing shade.

There is an increasing taste for the adornment of parks, both private and public, as well as the rural cemeteries, the school-houses, and even the railway stations. This must be very gratifying to you who have been urging the public attention in this direction; and you may perchance have so aroused public sentiment on the subject, that future petitions to our Legislature, asking for governmental protection, may meet a more cordial reception than formerly, when our requests were ignored by the solons who asked "to be excused from further consideration" of the petitions of the thousands of their fellow-citizens who had solicited this encouragement from the State. * * * We are told that *power resides in the people;* let us continue to address the law-making body, and, eventually, we shall be heard—aye, and obeyed!

How often, too, near all our cities where land speculators have laid off lots for suburban villages, do we see them first planting rows of shade-trees in advance of their sales, as an inducement that will be appreciated by purchasers.

Upon the present occasion we expect to have some valuable papers in this department of horticulture, and to receive some important suggestions from practical men—who will emulate the excellent advice given to the people of New York by their worthy citizen, J. J. Thomas, in relation to the embellishment of rural school-houses.

In the matter of Forestry, it becomes my duty to report as to the memorial to Congress, which was so heartily indorsed by you at the last annual meeting, as indeed it was by the societies of a dozen other States. The paper was duly presented by interested members of Congress, and referred to the Committees on Agriculture of the Senate and House of Representatives.

Copies of the memorial thus indorsed, and an address on the *Present Needs of American Forestry*, were presented to every member of each House, and a personal appeal was made to the committees, in session and individually. All our efforts, however, proved unavailing with them, though it was not love's labor lost.

The liberal prizes offered by Massachusetts for plantations of white ash and white pine especially, are said to have stimulated numerous plantations of these valuable native trees. In the same State a noble work is going on at the Arnold Arboretum, under the efficient care and direction of Prof. C. S. Sargent, of the Cambridge Botanic Garden.

B. Landreth, of Philadelphia, writes that he continues planting largely in Virginia, where he has 5,000 acres appropriated to forestry, and he boasts that he has 500,000 seedling trees of a single species, now ready to set out.

Tree planting has received a new impetus from the modification of the congressional timber act, and very many timber claims have been entered in the Western or trans-Missouri States, so that in Nebraska alone the State officials report 57,000,000 trees set out during the current year! Others of the prairie States are also planting largely, and Illinois bears the palm for the most extensive preparation for the coming demand—a single nursery establishment in that State, long celebrated for success in growing the coniferae from seed, has now several acres of these little plants in the shaded seed-beds, besides extensive nurseries of greater age, which are being "schooled" for their final destination, the *new forests* of the country. Deciduous trees, as well as evergreens, are nurtured there in very large quantities. 100,000 plants of a single species, with 25,000 of another kind, the walnut, grown by contract, have just been shipped to the plantations of a Kansas railway company, that is determined to provide something much better than cotton-wood for its future cross-ties.

Our friends in Iowa have been making great efforts to encourage tree-planting by their valuable pamphlets, giving practical instructions, as well as by the reports of their own efforts in this department of horticulture; and yet the traveler who crosses that noble State sees vast extents of occupied country that need an increased amount of woodland. From one of their own publications *, it appears that the natural forests occupy but six and a half per cent. of the whole area, and this is chiefly found in two comparatively heavy bodies of trees—one in the north-eastern and one in the south-eastern part of the State. In one county of the former alone does it reach twenty-four per cent.; while in the latter, the most heavily wooded, has but two per cent. A line drawn from the north-east to the south-west corner of the State will have most of the timber on its south-side, and all that region to the north-west of this line is exceedingly destitute of trees; some of the counties have but a fraction of one per cent. of timber. Notwithstanding the great efforts made to induce tree-planting, little apparent effect is yet produced, for the reason that the space is so wide. Indeed, the Report of the Census of 1875, from which the above figures are quoted, informs us that the total area of artificial forests of the State constituted but one-fifth of one per cent. No wonder, then, that the traveler across its broad and fertile prairies can see so little result in the shape of artificial groves.

In Muscatine county, on the Mississippi, it is reported that in forty years the natural timber growth on a tract of the bluffs has produced larger net returns than has been gathered from the tillage crops of a corresponding area of cultivated lands of the same character of soil.

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* *College Quarterly*, November, 1878.

What are we doing here in Ohio toward the replacing, or even the preservation of the remnants of our once noble forests? Nothing worth naming. We can not point even to an arboretum at our Agricultural College grounds, where the students and others might familiarize themselves with the trees that may be grown on our soils. At present *tree botany* can only be studied at the expence of wide travel over the State, and by trespassing upon the liberality of some few private owners, who have gathered about them collections of trees, more for ornament than for study, since these, like the trees in our public parks and cemeteries, are not planted or grown with a view to illustrate the art of Forestry. The duty of imparting instruction in tree lore devolves upon us, the State Horticultural Society.

Here and there, happily, an enthusiast in trees steps to the front, and by dint of persevering effort demands and receives attention for his favorites of our sylvas. To such an one now among us, the country owes a debt of gratitude, which will one day be paid by the people of Ohio, and indeed of the NATION, for his liberal efforts on behalf of the useful but hitherto neglected *Catalpa tree,* respecting which we hope to have a paper at this meeting from its able advocate, E. E. Barney, Esq.

Allow me to direct your attention to the study and culture of our *native trees,* both deciduous and evergreens, instead of seeking so exclusively those from other lands. Particularly are you urged to look to the native evergreens, which can now be obtained from some of the nurseries of our own country, instead of importing them at great risk and expense. No apology will be offered, and it is hoped none will be expected, for the introduction of this topic before our Horticultural Society.

AGRICULTURAL COLLEGE LECTURES.

One of the hopeful signs of the times is the announcement from the Agricultural College at Columbus that a special course of lectures for farmers will be givien next month to those who cannot reap the advantages of the entire curriculum of studies at that institution. We had hoped to secure the attendance of some of the professors at this meeting, with valuable contributions in aid of horticulture, and from whom you might have obtained further particulars respecting the approaching farmers' institute.

OUR PROGRAMME.

The programme of topics to be presented and discussed at this meeting is before you. It promises a rich and varied repast. The appropriate committee (on Business) will arrange the details and the order of exercises. You will excuse the calling of your attention to a paper on "Rules for Fruit Awards," which will be presented especially for your careful discussion with a view to its amendment and improvement. It is deemed a matter of importance to all concerned, to the exhibiters at our fairs, and particularly to those upon whom is thrown the burden of that delicate task, the awarding of the prizes, in which it is most desirable that they should be guided by fixed rules. A similar topic will be discussed by our friends in Michigan, now in session, and it may be that our joint efforts can be brought to bear upon the subject with happy results. Another suggestion for your guidance in the discussions and other exercises at the meetings of the Society will, it is hoped, be taken in good part from an old friend, who has long worked with you, shoulder to shoulder, in advancing our cause.

We come together for mutual improvement as well as for the diffusion of information to benefit others. Each one of you may have something valuable to communicate to his fellows. Let us shun the two extremes of diffidence and forwardness—especially avoid hiding your light under a bushel; let each contribute his share to the general fund of information, and with your accustomed good nature leave to your presiding officer the duty of deciding points of order. Consider our meeting rather a school of horticulture than an arena for parliamentary discussion, and we may confidently rest assured that, with every member discharging his duty as thus indicated, the time passed here will not have been spent in vain.

NECROLOGY.

One of the saddest duties devolved upon us at these annual meetings is, that while taking a retrospective view of the past twelve-month, and while looking around us at the welcome faces assembled, we are painfully reminded of the uncertainty of life by the gaps that inevitably appear in the circle of our co-laborers. The past year has been no exception to its predecessors. We have been called upon to mourn the loss of members, and of co-workers in other places, whose names at least and whose works are familiar to all. The demise of Willard C. Flagg, of Moro, Illinois, on the 30th of last March, was mentioned in our eleventh published report, but his devotion to horticulture requires this further notice and tribute. Mr. Flagg occupied many posts of honor and importance in his own State, and he was an earnest supporter of horticulture. At the time of his death he was Secretary of the American Pomological Society. He had long been the horticultural editor of the *Prairie Farmer*, and was President of the National Agricultural Congress. His liberal efforts in fruit-growing resulted in the most extensive orchards, embracing an unusually rich variety of various fruit species.

Dr. Jared P. Kirtland, of Cleveland, was one of the most distinguished men who have been connected with this Society. No branch of study came amiss to him, nor did he come amiss to anything he ever undertook. Prominent in medicine, as a professor, he was in every department of science a teacher. In the geological survey of our State he brought to bear especially his extensive and familiar knowledge of our flora and fauna, fruits, fowl, and fish, and insects; every department of life received his care, and were objects of his study. In the cultivated fruits particularly he attempted to solve some of nature's riddles, and by crossing different kinds he succeeded in the production of many new varieties, some of which are possessed of rare excellence.

Dr. Kirtland's flower garden was always an object of interest and contained specimens of rare beauty, both natives and exotics. His magnolias were an object of special care, and he succeeded wonderfully with the Sweet Bay, by grafting it on the Magnolia acuminata. From a weak, struggling bush it became a sturdy tree, upon which a succession of blooms continued to open and diffuse their fragrance all summer.

Of his social nature and genial character it were impossible to speak with excess of eulogy.

"None knew him but to love him,
None named him but to praise."

More recently we have had to follow to the grave a worker familiar to you all, who has literally died in the harness, and who perhaps also died of his work. John H. Klippart, Secretary of the Board of Agriculture for twenty years, and a hard student, and had accomplished much work in many different branches of the art. He was a botanist also, and fond of house plants that he cultivated for their study. His interest in horticulture was manifested by the active part he took in the local society at Columbus, and in his frequent attendance upon the meetings of the State Horticultural Society, before which he made brief addresses upon several occasions.

Another quite recent departure from the ranks of worthy horticulturists has to be chronicled in the demise of Dr. H. A. Swasey, at Tangipahoa, Louisiana, of yellow fever, while at his post of duty practicing his profession.

Dr. Savasey was a devotee to horticulture, and by his writings for the rural press he contributed largely to the diffusion of valuable information on this subject to the people of the South.

Thomas Rivers, a professional nurseryman at Sawbridgeworth, England, where, for half a century, he had been at the head of his calling, died since our last meeting, and though none of us perhaps ever saw him, our familiarity with his name and with the results of his noble efforts in the cause of horticulture, must make us feel that we have lost a friend. His memory will be kept fresh in the roses and fruits that he originated, some of which bear his name. His writings also remain to remind us of the beautiful enthusiasm that stimulated his efforts to benefit his fellow-men.

And death has been again at our very doors. He has taken one from the pleasant circle of our entertainers here. One of the staunch supporters of the local society, whom we had hoped to see, and from whom we had expected to hear upon the occasion of this meeting, has closed his eyes upon the beautiful fruits and flowers which he loved so well. Mr. John Powell, of this city, long known, highly respected, and always listened to with pleasure at the meetings of the Society, died on Thursday, November 7th, at the age of sixty-seven. His haven of rest will be among the blessed, and in a region of perpetual bloom. He sought and found the continuing city.

CONCLUSION.

And now, my friends, reminded as we are of the uncertainty of time, by these departures from among our fellow-laborers, it behooves us who remain to bear in mind the advice, "Be ye also ready!"

Let us strive so to walk our daily rounds that when we also shall be called, our summons may be accompanied with the assuring words, "Well done, good and faithful servants, enter ye into the joy of your Lord."

After the President's annual address, R. W. Steele, Esq., of Dayton, gave the following:

ON RURAL CEMETERIES.

The Ohio Pomological Society was organized in 1847, and for twenty years confined its attention almost exclusively to fruit. It did much to promote the cultivation of fine fruit, and particularly in the department of the nomenclature of fruits, performed an office gratefully acknowledged by pomologists everywhere. Having a few years ago adopted the more comprehensive name of Ohio State Horticultural Society, and thus widened the topics for discussion, some thoughts on Rural Cemeteries, upon which I have been requested to prepare a paper, will not be foreign to its objects.

Gardens, parks, and rural cemeteries, as at present conducted, are so intimately related as to be very properly classed under the general head of horticulture. In a recent beautifully illustrated English work by W. Robinson, entitled the "*Parks and Gardens of Paris*," the great superiority of American rural cemeteries over the cemeteries of Europe is freely admitted, and the distinctive name of *garden* cemeteries given them. The establishment of rural cemeteries can be traced in most cases to the impulse given by local horticultural societies, and men prominent in such societies have usually been the founders of them. When the *Horticulturist* was established in 1846, by A. J. Downing, there was little taste in the country for rural adornment, and the readers of that delightful magazine while edited by Mr. Downing will recollect his eloquent advocacy of parks and cemeteries. Contrasting the present with that time, we realize the progress that has been made. Mount Auburn, Laurel Hill, and Greenwood, the first of our rural cemeteries, were then comparatively new. In the matter of parks the country was still more deficient. In the large cities there were a few public squares where the people might catch a breath of fresh air, but there was not a park in the United States worthy of the name. It was as late as 1851 that Mayor Kingsland, of New York City, recommended the purchase of 160 acres of land for a public park. When the proposition was violently opposed because of the great expense of so large a tract of land near the city, Mr. Downing in the *Horticulturist* boldly objected to the *smallness* of the proposed park, and advocated the purchase of at least 500 acres. How wisely he forecasted the requirements of the near future! To-day every town of any importance has its rural cemetery, and every city its park. Central Park, New York, comprises 843 acres—more than five times the number at first proposed by Mayor Kingsland—Prospect Park, Brooklyn, 553 acres, Fairmount, Philadelphia, 2,740 acres, the St. Louis parks in the aggregate 2,000 acres, and Chicago, which never lags in the race of enterprise, has provided for six parks, comprising an aggregate of 1,900 acres, all connected by a cordon of boulevards 250 feet wide, making a continuous drive (not including drives in the parks) of thirty-three miles! Let us remember gratefully the two men who stand out most prominently at the inauguration of this grand work—A. J. Downing and J. Jay Smith, of Philadelphia.

Some one may say, I heartily appreciate the provision of parks for the use of the living, but why all this care and expense in providing resting-places for the dead? What gratification can the senseless dust derive from beautiful surroundings, green grass, fragrant flowers, and overshadowing trees? The old "grave-yard," with its decaying vegetation, its weeds and nettles, its stray swine and cows, is a fitter emblem of death, so gloomy and repulsive. Better let the worn-out and forgotten body return as rapidly as possible to the dust, and perform the functions designed by nature.

This is the voice of the materialism of the present day, but it is not the voice of that which is highest and best in us. We turn with a shudder of disgust from the German materialist who directed that after death his body should be consigned to the manure heap that it might be more rapidly converted into a fertilizer. Nor can we much sympathize with that devotion to science which leads a woman (as recently reported in the newspapers) coolly to will her body to the dissecting-table, and to direct that her skeleton shall be carefully prepared and hung up that students in a medical college may be instructed in anatomy! How much sweeter and nobler the pathetic appeal of Shakespeare—

"Good friend! for Jesus' sake forbear
To dig the dust inclosed here."

Or Spenser's reverence in the Faery Queen for the dead body—

"The sixth had charge of them being now dead,
In seemly sort their corses to engrave (bury),
And deck with dainty flowers their bridal bed,
That to their heavenly spouse both sweet and brave
They might appear, when he their souls shall save.
The wondrous workmanship of God's own mould,
Whose face he made all beasts to fear, and gave
All in his hand, even dead we honor should.
Ah, dearest God, me grant, I dead be not defoul'd!"

The materialistic philosophy of John Stuart Mill did not silence the voice of *his* better nature. An unbeliever (or at least doubter) in the immortality of the soul, he kept his wife's grave beautiful with flowers, and residing near, spent his last days in watching over her tomb. There is no sadder and more touching spectacle in all literature than the hopeless vigil of this great man by the grave of his dead wife!

But the question whether we shall show reverent regard to the bodies of our dead friends does not need nor admit of argument. It is a matter of feeling, and the common consent of mankind in all ages has passed judgment upon it which materialism can never reverse. The splendid memorial structures of all peoples and all times assure us that tender care for the dead body is an indestructible part of our nature. Nor did the practice of cremation among the Greeks and Romans evince any lack of honor for the remains of their friends. The act was performed with solemn religious rites; the ashes were carefully and reverently collected, placed in beautiful urns, and deposited in tombs costly and indestructible.

But it is from Christianity that we derive the idea of our beautiful and cheerful cemeteries. Our Saviour himself gave his sanction when he replied to the complaint over the precious ointment wasted, "She did it for my burial." The early Christians, persecuted and hunted into the caves and dens of the earth, with an unshaken faith in the immortality of the soul and the resurrection of the body, regarded death as a joyful event. All the inscriptions left by them in the catacombs speak of cheerfulness and joy, and from them we derive our beautiful and most significant word "cemetery," or "sleeping place."

There is no more common feeling among the very poor than a desire for decent burial, and many of them have as great a horror of being interred in the potter's field after death as of going to the poor-house while living. Officers of cemeteries often meet with cases where every human hope and help having failed, poor souls find comfort in the thought of a grave lot owned in the cemetery, and a sufficient sum of money saved to secure respectable burial. Visitors to our cemeteries must have often noticed women too poor to pay for the services of others, laboriously cutting and carrying the sod to make beautiful the grave of husband or child. On pleasant days what spectacle more beautiful than the one always witnessed in our cemeteries, of rich and poor alike busily engaged in decorating the graves of departed friends. Rural cemeteries do not minister to pride or ostentation, but supply a want of human nature as real, if not as palpable and urgent, as hunger and thirst. Laborers in this cause may feel that they are as truly engaged in a work of benevolence as those who are directly ministering to the material wants of men.

In view of this universal recognition of the sacredness of the dead body, and the tender care and loving ministrations with which surviving friends watch over it, what crime can be greater than grave robbery, which is now so lamentably common? Rural cemeteries are much less liable to desecration of this kind than the country graveyard. This results from the greater watchfulness exercised, and the consequent greater risk of detection and punishment. It is believed that no grave has ever been disturbed at Spring Grove or Woodland. But when savings banks are robbed in daylight in the busy streets of New York, and the grave of A. T. Stewart is rifled right on a policeman's beat, no watchfulness is sufficient to prevent robbery when the inducement is sufficiently great. The only remedy is an indignant public sentiment, which shall demand the strictest enforcement of the law and the condign punishment of the offenders—the professional body-snatcher and, *particularly*, his aiders and abettors.

Rural cemeteries perform other important offices besides furnishing resting places for the dead. As a sanitary measure they are of the greatest value. Nothing can be more injurious to the health of a town or city than a crowded graveyard within its limits. In some of the churchyards of London coffins have been placed in graves tier upon tier, until the surface of the ground has reached the sills of the church windows. So impossible is it to identify bodies that the sextons sometimes dispose of the corpse, and, breaking up the coffin, make merchandise of the plated ornaments. The mode of burial in the graveyards of Paris is thus described by Robinson: "Where the poor people bury their dead may be seen a most revolting mode of sepulture. A very wide trench, or fosse, is cut, broad enough to hold two rows of coffins placed across it, and one hundred yards or so in length. Here they are rapidly stowed in, one after another, close together—no earth between the coffins—and whenever the coffins, which are very fragile, happen to be short, so that a little space is left between the two rows, those of children are placed in lengthwise between them to economize space, the whole being done much as a workman would pack bricks together. This is the fosse commune, or grave of the humble class of people, who can not afford to pay for the ground. The remains of these people, thus dishonored, are not even allowed to rest in the grave, such as it is, but after the lapse of a short time their bones are dug up and the ground prepared for another crop." Nor do other classes, with the exception of a very few, fare much better. In another place he says: "One day, when in the cemetery of Mount Parnasse, I saw the workmen making a new road, the bottom of which was formed of broken headstones, many of them bearing a date only four years before." This mode of burial and desecration of graves applies as fully to the famous cemetery of Pere la-Chaise as to the others. In view of such facts, Robinson may well say that the "Americans are the only people who bury their dead decently and beautifully." While in this country we have no such shocking instances of overcrowding, our old-fashioned graveyards are by no means creditable to us. Even in Dayton two graveyards have been condemned, and are now covered with buildings. In excavating cellars at the corner of Main and Third streets, the skeletons of many unknown dead were thrown out, with none to care for them.

In many important particulars a rural cemetery is a beautiful park for the enjoyment of the public. Of course it must be subject to such restrictions as will prevent conduct inconsistent with the sacredness of the place, but decent seriousness is no enemy to true enjoyment. The multitudes who constantly resort to cemeteries of this kind for recreation and fresh air, prove that this feature is highly appreciated, and the benefit thus conferred, if secondary, is not unimportant.

A well-managed cemetery may also be made an arboretum, and thus an educator of the people. Beautiful shrubs and trees, new to the locality, may be planted, tested, and if found suitable to the soil and climate, be extensively introduced into neighborhoods. That this is the effect of judicious tree-planting anywhere, is well known to every observer. Books on landscape gardening are read by very few, but skillful management, beautiful flowering shrubs, and trees with fine foliage and graceful habit, catch every eye. No doubt the Soldiers' Home, visited every summer by thousands of people from every part of the State, is doing more to promote taste for landscape gardening in Ohio than all other agencies combined.

The practical question remains to be considered, how shall a rural cemetery be laid out and planted to secure the most satisfactory results? So much has been written on this subject, and so well, that I have no hope of presenting anything new. Some suggestions, however, which are the result of experience, in the practical working of a rural cemetery, may have value. I use Woodland Cemetery, of Dayton, for illustration, because I have been long connected with it, and not because I think it superior to others, or claim that there is anything peculiar in its management. The same general principles underlie the management of all well regulated rural cemeteries, and the rules and regulations of all are almost identical. It is a matter of some pride to the citizens of Dayton that Woodland is one of the oldest rural cemeteries in the United States, preceding Spring Grove, at Cincinnati, three years. It is certainly creditable to the public spirit of our citizens that they should have been in advance of the general public on this question, and special honor is due to John W. Van Cleve, from whom the suggestion came, and who labored so faithfully to make it a success.

The first important step, in the establishment of a rural cemetery, is to receive a charter that shall place the management absolutely in the hands of the trustees, with large discretionary powers. Every deed executed by the trustees of Woodland Cemetery contains the following instructions:

"1. That the said lot of land shall not be used for any purpose except as a place for the interment of the dead, and the erection of stones and sepulchral structures, and the cultivation of trees, shrubs, and plants.

"2. That no trees within the said lot shall be cut down or destroyed without the consent of the trustees of said association, except such as it may be necessary to remove to make room for the construction of a grave, vault, or monument, and in that case the same shall be done according to the regulations that may be established by said trustees.

"3. That the trustees of said association shall have the right at any time to enter upon said lot, and to remove any tree or shrub, or part of any tree or shrub, situated thereon, which they may consider dangerous, or an obstruction to the use of any road, alley, or other lot.

"4. That if any monument, or effigy, or any structure whatever, or any inscription, shall be placed on the said lot, which the majoriry of the trustees of the said association shall determine to be indecent, offensive, or improper, the said trustees shall have the right, and it shall be their duty, to enter upon the said lot, and to cause such indecent, offensive, or improper object to be removed therefrom.

"5. That no fence or inclosure shall be erected on said lot."

These restrictions are so clear and definite as to admit of no question as to their meaning, and have on many occasions prevented serious conflict between the trustees and unreasonale lot-owners. The large majority of lot-owners submit cheerfully to reasonable restrictions, for they feel the same interest as the trustees in making the cemetery as perfect as possible. There are, however, always a few in whom all wisdom is concentrated, and whose stubbornness is equal to ther conceit, who are never happy unless engaged in a quarrel. Such restrictions effectually silence opposition from this troublesome class of people.

In the selection of the ground, the first essential is that the soil should be of such a character as to admit of perfect drainage. Nothing is more repulsive than a grave partly filled with water. The location should be sufficiently distant from town or city, to prevent the possibility of its being cut up by street extensions, or encroached upon for building purposes. A sufficiently large tract should be secured to make the best landscape effects possible, and the ground should be rolling to give diversity to the surface and to admit of outlooks over the surrounding country. It will be a great advantage if woodland can be obtained, as in this way, by judicious thinning, results are secured at once which could only be attained in the course of years by the most judicious planting. Some landscape gardeners contend that better effects can be produced when the planting is wholly artificial; and this may be true, if the element of time is left out of the calculation. Woodland was originally covered with the heaviest timber, and it was necessary to remove a large part. The price received for the timber paid for its removal, and the remaining trees gave at once a distinctive and pleasing character to the cemetery, as also its name, Woodland. It is a common impression that the removal of the large trees from a forest insures the death of the remainder, but so far was this from being true at Woodland that nowhere can more beautiful and thrifty trees be found, and in a few years it was necessary to resort to a second thinning. Some persons, to prevent the supposed danger of trees dying from thinning, recommend the topping of forest trees. This, except in rare cases, ought not to be done. It is unnecessary, and a forest tree is never so symmetrical and beautiful as when left to grow in its natural shape Neither knife, saw, nor axe should be applied to a forest tree unless some very especial reason directs its use.

Fortunately, the dogwood (*cornus Florida*) and the red bud or Judas tree (*cercis Canadensis*) were plentifully mingled with the large forest trees, and were carefully preserved. Blooming together in the spring, no sight can be more surpassingly beautiful than the masses of contrasted pink and white flowers. What small ornamental trees have we that surpass these in beauty? The dogwood presents a three-fold claim for our admiration: the snowy whiteness of its spring bloom; its abundant berries of brilliant red; and its deep lake-red autumn foliage. With all its rich treasury of ornamental trees, the most marked feature of Greenwood, New York, is the blooming of the dogwood. The indigenous trees growing at Woodland show how rich our forests are in beautiful trees. They comprise forty-one distinct varieties, many of which cannot be surpassed for ornamental purposes. The autumn foliage of a tree is not an unimportant consideration. Dean Stanley, during his recent visit to America, said that one of his chief anticipations of pleasure from his visit was the sight of our autumn woods. No finer trees for this purpose can be found than the maples, the oaks, the sour gum, the dogwood, the black haw, the sumac, and the sassafras; and among vines the five-leaved ivy and the bitter sweet, all of which are indigenous at Woodland.

Evergreens are indispensable in a cemetery. They are beautiful in summer, afford a fine contrast to the colored leaves in autumn, and relieve the dreariness and bleakness of the winter landscape. A great variety of them have been planted at Woodland, and it may be well to mention some of the best. In the list are a few that are known to everybody, but they could not properly be omitted, as they are the best of all. It is not proposed to give a complete list of desirable evergreens, and only those are included that are now growing vigorously at the cemetery.

Norway spruce (*abies communis*), hemlock spruce (*a. Canadensis*), black spruce (*a. nigra*), white spruce (*a. alba*), Nordmann's silver fir (*a. Nordmanniana*), European silver fir (*a. picea*), Austrian pine (*pinus Austriaca*), Corsican pine (*p. laricii*), star pine (*p. pinaster*), Bhotan pine (*p. excelsa*), P. Maspeliensis white pine (*p. strobus*), Irish juniper (*juniperus Hibernica*), Swedish juniper (*I. communis sueciea*), *Biota aurea*, *Biota compacta*, and *Thuja Lericoides.* Where low growing pines are desired, *pinus pumilus* and *pinus mugho.* Prostrate juniper is admirably adapted for rock-work, and nothing among evergreen shrubs has been found equal to the mahonia. Lawson's cypress, which Mr. Downing pronounces the finest of evergreens, if not others, about the hardness of which some doubt is expressed, was planted in 1870, has survived the winter, and is now doing well. The English yew, planted at the same time, still lives, but is not vigorous. The *cedrus Atlantica*, nearly allied to the cedar of Lebanon, and which it was hoped would prove hardier than that tree, was winter killed. The deciduous cypress and European larch, although not evergreen, are closely allied to coniferous trees, and are beautiful and desirable. The salisburia or ginko tree (deciduous), nearly related to the pine tribe, may be mentioned in this connection as curious and well worth planting.

Deciduous trees and shrubs not indigenous to the grounds are many of them quite as desirable for planting as evergreens. Skillfully introduced, they add greatly to the variety and beauty of the landscape. In an attempt to name them it would be difficult to know where to begin or where to end, and to which to give the preference. The catalogues of our nurserymen and florists will give a large list of beautiful varieties, with full descriptions, and the only difficulty will be in making a selection among so many almost equally good.

A natural supply of water sufficient to form lakes is a very desirable feature in cemetery grounds. There can be no perfect landscape without water. No part of Spring Grove is so beautiful as the region surrounding the lakes. In this respect Woodland is deficient. A partial remedy is found by forcing water from an inexhaustible well, with a steam pump to a reservoir on the summit, from whence it is distributed by pipes to all parts of the ground, to be used for watering, and also to supply a small lake.

A great advance has been made within the past few years in cemetery management. Mr. Downing, with the true instinct of the landscape gardener, saw the radical defect of the old system. As early as 1846 he sharply criticised what he called the "iron mongery," prevalent at Laurel Hill, at that time the model cemetery of the United States. Thinking, no doubt, that the prejudice in favor of fences around cemetery lots was too inveterate to be overcome, he advised the substitution of low evergreen hedges, and if iron *must* be used that it should be covered with vines. It remained for Mr. A. Strauch, at Spring Grove Cemetery, Cincinnati, to take the bold, advanced step which has transformed our cemeteries. His methods are so simple, appropriate, and beautiful, that the wonder is they were not adopted from the beginning. Roads are run, and lots, unlimited in size, are laid out with reference to the contour of the ground, and not with the regularity of city streets and lots, simply for convenience in numbering and recording. Inclosures of all kinds are strictly prohibited. Instead of the numerous tall stone slabs which formerly disfigured our cemeteries, a single family monument is placed in the center of the lot. The foundations of the monuments are required to be of the most substantial character, and where stones are used to mark the graves they project but little above the surface of the ground, and are placed at sufficient depth to be beyond the reach of frost.

Mounds over graves break up and injure the appearance of the lawn, and are an obstruction to the use of the lawn-mower. Long association has made this mound almost a sacred appendage to the grave, and such association we appreciate and respect. But a small stone can more certainly mark and guard a grave, and the advantages of a smooth surface are so apparent that, no doubt, in the end mounds, as is now partially the case, will be wholly dispensed with in our best cemeteries.

The old and new parts of Woodland illustrate by contrast the vast superiority of the present methods. The same is true of Spring Grove, although lot owners, by the removal of fences, are every year more and more conforming the old part to the new. This superiority consists in the finer landscape effects, more solidity and better taste in the monuments, and greater ease and economy in keeping all parts of the grounds in perfect order. The use of the lawn-mower, which is indispensable for the production of fine sward, is almost impossible under the old system. In our ordinary cemeteries, by deaths or removal, family lots are often left with no one to feel a personal interest in them, and present a forlorn appearance, overrun with grass and weeds, with caving headstones and fences unpainted and dilapidated. In a cemetery conducted on the new plan, the lawn-mower would keep the grass nicely shaven, and the substantial monument would stand for generations without repair.

Mr. Robinson in his book bestows high praise on Spring Grove Cemetery, which he pronounces in "some respects the best ordered cemetery in America." He prints two beautiful engravings of portions of the grounds, "for the sake of comparing them with the ghoul-yards of Paris and other European cities." After giving some details of the management similar to those already presented in this paper, he says: "To the arboriculturist, Spring Grove ought to be a place of great interest, as will be many similar places. It was the desire of the directorate from the first to introduce a variety of suitable representatives of the vegetable kingdom into the grounds. In this they were considerably assisted by the owners of lots, the most prominent of them being members of the Cincinnati Horticultural Society, in which society originated the idea of establishing a rural cemetery in this spot. The greater part of the grounds when purchased was densely covered with native forest trees. In the lower or southern part the elm, the sycamore, and the ash predominate; the central part is chiefly covered with tulip trees, sugar maples, sassafras, etc., while the western division is almost exclusively occupied by beech, sour gum, red bud, and dogwood. The northern part is adorned with some of the finest groves of various kinds of oak, of nature's own planting centuries ago. The effect produced by the brilliant colors which most of these trees assume in autumn is magnificent. The introduction of varieties of evergreens, whose perennial verdure is particularly appropriate for ornamenting places of sepulture, has contributed much to mitigate the bleak desolation of winter and to render the prospect agreeable at all times."

This extract illustrates the intimate relations existing between all parts of the civilized world, and pleasantly reminds us that good work done in Ohio may make its impress on the best thought and practice of Europe. Singularly the name of Mr. Strauch, who gave to Spring Grove its distinctive character and its acknowledged superiority, is not mentioned in connection with this glowing account. It may be well to note in this connection that one of the most active and influential founders of Spring Grove, and for many years until his death a director, was A. H. Ernst, the first president of this society, and that among the few who attended the first meeting for its organization was Dr. John A. Warder, our present President. The meeting was held at the house of Robert Buchanan, another prominent and well known horticulturist, who has been President of Spring Grove from the beginning.

The trustees of new cemeteries may freely avail themselves of the rich experience of all who have preceded them, and start with the great advantage of having no part of their grounds injured by the old methods. It will require, however, constant watchfulness and firmness to prevent departures from the simple and natural method which has been described. Lot owners, if permitted—from no bad purpose, but simply from lack of taste—will be guilty of innovations which will greatly mar the beauty of the grounds. The rules must in all cases be unflinchingly enforced, and at once, for if an innovation gets foothold it will be almost impossible to uproot it. There is a new cemetery near Dayton—Calvary—with the management of which Mr. N. Ohmer is connected. Beautifully located on hills which command a magnificent view of the city and the Miami Valley, it may illustrate how the application of these new principles of cemetery landscape gardening can heighten and perfect the beauty which nature has bestowed with such a lavish hand.

Having given these very general suggestions for the management of a cemetery, it may be well to say in conclusion that in the laying out and planting of cemetery grounds the very best professional skill should be employed. Lord Bacon says: "A man shall ever see that when ages grow to civility and elegancy, men come to build stately sooner than to garden finely, as if gardening were the greater perfection." Any person of taste may find keen delight in the beautiful effects of landscape gardening, but it is only the practiced eye and the skillful hand that can produce them.

It was now 9 o'clock, but Mr. David D. Thompson, of Cincinnati, having been invited to give a lecture at this meeting on the Climatic Effects of Forests, and he being unable to remain for the next day, it was voted that he be requested to deliver the lecture at this time, which he accordingly did as follows:

THE CLIMATIC EFFECTS OF FORESTS.

The destruction of the American forests, from a commercial standpoint, is alarming. Their protection for this reason should receive the attention of business men and legislators. But there are results that are beyond a money estimate, and they affect not only our moneyed interests but our physical as well. A substitute may be found for wood as fuel, as building material, and for furniture, but there is nothing—at least nothing as yet known—that will have the same effect upon the climate of any and all regions.

In consequence of the destruction of our forests many of our streams have dried up, and others are becoming dry. As the woodlands are cleared away the streams diminish to such an extent as to materially injure the manufacturing interests depending upon water power. New sources of supply are often required for our canals and for the use of large cities and towns. Many streams that a few years ago were navigable are no longer so. The reason for this will be readily understood when we consider the influence of forests upon the moisture and temperature of the air. Deciduous trees, during the season when in foliage, are continually drawing from the earth, and giving off from their leaves, a considerable amount of moisture. This change from a fluid to a gaseous condition is a cooling process, and the air near the surface being screened from the sun and wind, becomes so humid that a rank vegetation often springs up and thrives that would in an open field perish in a very short time. Being thus charged with moisture, the air does not evaporate the rains which fall, and the soil being open, readily allows the water from melting snows and rains to sink into the earth, from whence much of it arises to the surface in swamps and springs and flows off in brooks and streams. Many farmers have been surprised at the unexpected sudden drying up of their springs and wells, rendering thereby the continuance of the old-fashioned spring-house, the pride of the early farmer's thrifty housewife, almost an impossibility. They would find the cause for it in the destruction of their forests.

Forests so effectually contribute to the retention and preservation of the waters, that in some countries springs flowing through the year have entirely disappeared after the woods had been burned, nor did they reappear until after the verdure had been restored, their existence being closely dependent upon its presence.

No one can doubt that there is in many places an increased irregularity in the distribution of the rainfall through several months of the year, and that there is a greater tendency to droughts, floods, and uncertain crops. It has been observed that those parts of any State which have a high percentage of forest surface are the ones that receive the greatest amount of rainfall. Whatever theories may be advanced to account for the uncertainties of drought and flood, it is certain that from year to year there is the same amount of exposure of oceans, lakes, and other water surfaces, to the sun; and the probability is that about the same amount of water is each year evaporated. This is precipitated whenever and wherever the air containing it becomes cooled down to the degree of saturation or below; and while some regions, from prevailing winds and other circumstances, receive abundant and frequent periodical rainfalls, other regions are not so favored by these conditions, and the quantity of rain varies according as the causes operating to bring about precipitation exist or are wanting. Whatever has a tendency to increase the humidity or to reduce the temperature is, so far as it appears, a cause of rain. It is noticeable in all countries where forests exist that their presence tends to this result in a greater or less degree, and often in so marked a manner that there can be no mistake in assuming the cause.

It has often been observed in snowy countries that woodlands retain the snows where they fall, and delay their melting in the spring. In such localities the snow is prevented from being drifted by the winds, and when it melts disappears gradually, being absorbed by the soil rather than flowing off upon the surface. This delay often checks a too early appearance of fruit blossoms, and the effect upon the interest of agriculture, especially meadows and pasture, is most beneficial.

Investigations upon this subject in this country have been so recent that facts showing the actual results upon streams from the clearing of woodlands are not recorded. In Europe, however, statistics are carefully kept. It is not unreasonable to believe that what has been discovered to be the fact there is equally the fact here. It is as important to know what causes produce certain results there as it is to know that those results are produced. At the International Congress of Land and Forest Culturists, at Vienna, in 1873, some startling statements were made. Cases were cited showing that in consequence of clearings there had been a gradual decrease in the depth of the large streams of all countries. In some cases large rivers have entirely disappeared. The Rhine, the Elbe, and the Oder are all shallower than in the past. It was asserted that the Elbe, which rises in Bohemia, where until recent years the forests were entirely unprotected, and were destroyed in a most reckless manner, decreased in depth ten feet in fifty years. It is a historical fact that the lakes in the valley of Mexico have greatly contracted since the time of the old Aztecs. The city of Mexico occupies its ancient site, but instead of being on an island, as formerly, it is some distance from shore. This is attributed to the felling of the forests that in olden times covered the neighboring hills. In the mining district of Popayan it had been noticed that the streams that moved the stamping mills were decreasing in volume every year, although observations showed that the fall of rain had not diminished. The universal cry at last became, "What shall we do for water?" Somebody with common sense enough at last named the real cause, and the destruction of the neighboring forests was prohibited. Nature soon repaired the wastes, the barren hills were clothed with vegetation, and the water-courses resumed their former volume. In early times Palestine abounded in rivulets and fountains. Water gushed forth from nearly every hill. How changed to-day. The channels of these streams remain, but they are totally dry except in the rainy season. Their great number is sufficient proof of the former abundance of water. Such dry water-courses, which are called *wâdys*, are one of the most distinctive features of the physical geography of the country.

It has been shown by observations that in the country there is more of that necessary element of pure air called *ozone* than in the city. Dr. Smallwood, in a work on "Ozone," says that any cause capable of increasing the relative amount of vapor in the atmosphere tends to the development of this substance. Its effects are so beneficial upon persons suffering from pulmonary diseases that such are often sent to the pine forests of this and other countries, that they may breathe the highly ozonized exhalations of the cone-bearing trees. Temperature and moisture determine the climate. One of the elements of the atmosphere is watery vapor, which is of great importance, for without it there could be no rain, no dew, no clouds, no thunder, no lightning, no rainbow, no blue sky. The greater the amount of vapor in the air the more easily will it condense in the form of dew, rain, etc. The soil in a dry atmosphere is less productive than in a wet, for the water that may be in it is more quickly evaporated. A dry atmosphere is said often to have an injurious effect upon the organs of respiration; and it is due to the vast amount of moisture present that a person can breathe easier and freer in forest air.

The presence of forest trees is thought in many instances to have been a protection from the ravages of pestilence. It was noticed during a cholera season at the infirmary at Baltimore, which had two wings, that in one wing, which was entirely exposed, there were numerous cases of cholera, a few of them fatal, while in the other, which was partly protected by forest trees, there was not a single case.

Malarial fevers are everywhere prevalent. Persons living upon hill-tops seem to be no more exempt from them than those living in the valleys. The renowned Frenchman, M. Becquerel, in his celebrated memoir on the climatic effects of forests, says that when a current of air loaded with malarial poisons enters a forest of a certain extent it is entirely freed of those elements. This has been seen in the Pontine marshes, near Rome, where a belt of trees preserves all that is behind it, while the uncovered part is exposed to fevers. It is believed by many well informed persons that many, if not most of our Southern cities, could be rendered comparatively exempt from such fevers as have ravaged them in the past by a judicious planting of large forests of Eucalyptus trees. From June to October in nearly every one of these cities, the people must continually take preventives or suffer from some form of malaria. This malaria comes from the swamps and bayous, and when from any cause or by any means the atmosphere is relieved of those poisons, the people are safe. It is believed that the Eucalyptus globulus will do this. The Eucalypti embrace a large family of trees and shrubs, native only in Australia. But of the numerous family, the Eucalyptus globulus, or "Blue Gum," possesses health-giving qualities that give it preëminence. For many years it was used only for fire-wood, fencing, and building; but at a time when educated physicians were very few in number in Australia, and the original settlers were compelled to doctor themselves and each other, the medicinal qualities of it, with other trees and plants which the All-wise Physician had himself provided, were discovered. The tree is an evergreen, and its bark, which it sheds annually, is rich in tannin and tannate matter. Some varieties attain to a vast size, rivaling in height, girth, and available timber the famous trees of California. The largest tree of which any evidence has yet been obtained was a Eucalyptus. The tree is a quick grower when once fairly rooted. It is most successfully grown from seed planted where the tree is to remain, for the young trees do not usually bear transplanting. Dr. Henry M. Marshall, who at one time lived in Cincinnati, but is now a resident of New South Wales, says that the tree bears the frosts of winter with indifference. This statement will evidently admit of some modification, for attempts that have been made to grow it at Memphis and elsewhere north of New Orleans have not met with success.

This gentleman also states that tracts of country once uninhabitable on account of their swampiness and the malaria exuding therefrom, have been rendered perfectly healthy and habitable by planting the Eucalyptus globulus, which possesses the marvelous power of not only neutralizing but also of using the malaria to assist its growth, and of thus rendering inert pestiferous exhalations by its aromatic and absorbing properties. Dr. Marshall writes that he has used a preparation of it most successfully in acute and chronic rheumatism and dysentery when all other known remedies had failed, in bronchitis, neuralgia, infantile croup, cuts and bruises, and several other painful but not necessarily fatal diseases.

There is no doubt, at least not in the minds of those who have given the climatic influence of forests much study, that the destruction of our forests has had its injurious effect upon our agriculture. Of late years there have been compl.ints of frequent failures of the peach, pear, plum, and other fruit crops in this and more no thern States. The potato has also become a less certain crop than in former years. This may be due partly to winds, which often are injurious to agriculture from their d ying effects—though they are a valuable agency in the distribution of rains, bringing moisture from the sea and other bodies of water where evaporated—and partly from the absence of electricity, of which forest trees no doubt contain a large amount.

In Michigan the results of the improvident clearing of forests are seen in the higher winds, the more sudden changes of temperature, and the more extreme cold of the winters. It has been observed that, during the past forty years, the winters have become more severe, with disastrous effect upon crops of various kinds. One year the wheat crop of the entire State, from lack of the usual covering of snow, and the absence of protection from wind and sun, was diminished in amount more than one-half. Thirty years ago the peach was one of the most abundant fruits, and it was planted everywhere. It was easily cultivated, bore fruit early, and yielded a luscious harvest. From May to October frost was unknown. But now the peach is a most uncertain crop, and frosts are liable to fall when most dreaded. The same effect has been observed in Maine, New Hampshire, Massachusetts, and even in Delaware and Maryland. In southern Ohio, which twenty years ago produced an abundance of this delicious fruit, the yield has gradually declined, and has become so uncertain that many fruit-growers have been obliged to cut down their orchards and to utilize the soil in some more productive crop.

In almost every instance these disasters might have been prevented, and may yet be overcome, by wind-breaks of belts of woodlands. The people of Michigan—a few of them, at least—have discovered this, and have begun to set out and cultivate forest trees for this purpose.

These woodlands would serve also as a protection for other crops besides fruits, and afford a shelter for man and beast. It is impossible to estimate the loss of both human and animal life from exposure to the freezing winds of winter. If we will but open our eyes and see what nature teaches us in the present, and will read what history teaches of the past, we ought to be alarmed at what may be our own fate unless the reckless and rapid destruction of our forests ceases. It is the habit of many people to say that America has been favored by the Creator above all the nations of the earth, and that he will permit not great affliction to come upon us. The Jews were the favored people of God, but to-day as a nation they are worse than without an existence. If we violate the natural laws by which the universe is governed, we will as surely suffer for it as when we violate the physical laws of our bodies. Other nations have either violated these natural laws, or their enemies have done so for them, and their bitter experience is recorded for our profit.

The terrible famine now raging in China, where millions have already starved to death and thousands more will perish before they are relieved, results entirely from the gradual but entire removal of the comparatively few forests from that region, thereby rendering it impossible for the soil to long retain what little rain may from time to time have fallen.

When first discovered, the island of St. Helena had heavy forests, but the introduction of goats and other causes finally destroyed these, and the island was rendered almost barren of trees. As a result, the records of the last century give accounts of very severe drouth, which occasioned great losses of cattle and crops. Late in the century the governor realized the necessity of restoring vegetation, and nurseries were established, experienced gardeners placed in charge, and trees from all parts of the world were planted and flourished. For the last few years drouth has been unknown, and the rainfall is spread almost evenly over the year. In South Africa the most disastrous effects have been felt from drouth, and inundation following sudden and heavy falls of rain.

When the interior of the island of Mauritius was densely wooded, a large portion of the rain that fell was retained in the soil. Filtration was so gradual that even in the driest years the lagoons received regular supplies of pure water, but at a time when the people were nearly wild over the cultivation of sugar, the forests were cut down that the cleared land might be used for sugar raising. In consequence, the greater part of the rain is carried away to the seas, and in dry weather the sun's rays beat down on shiny, fetid marshes. The island, once noted for its salubrity, has become a hot-bed of malaria, and during the last ten years the mortality from fever has been very great. While evaporation after heavy rains is taking place, fever often becomes epidemic, as was the case a few years ago, when it raged through March, April, and May. From lack of sufficient moisture, many sugar plantations have been abandoned, and the planters realize that they have killed the goose that laid their golden eggs.

The khanate of Bucharia, which was once one of the most fertile regions in central Asia, and when well wooded was an earthly paradise, has been transformed into an arid desert. Since the forests between Guatemala, in Central America, and San Jôse have been destroyed, the inhabitants have been exposed to miasms that have produced new diseases. The climate is less uniform, the seasons more capricious, and storms more terrible. They are now planting the Eucalyptus to use in the place of forests, and to dry up marshy places. This tree has also been introduced into India and Cyprus, several of the South American States, California, the West India islands, and Mexico. Fifty thousand of them are to be planted about the city of Mexico.

Palestine, Persia, Greece, Sicily, Spain, and southern Russia are all now suffering in consequence of the destruction of their forests. Few persons realize the importance of keeping up the supply of our forests, and of not only preventing further unnecessary destruction, but at the same time to encourage replanting and cultivation. It is true that in some localities there is an excess of forest growth, but strange to say such are not the localities that are being so rapidly denuded of their trees.

Some people know only that which they learn by their own experience, and the sadder and more painful the lesson the better they remember. The opportunity is now offered us of profiting by the experience of other and less favored nations. If we refuse to do so, the responsibility will be with us—and also the suffering. If nothing is done to bring about a change, the probability is that within the next century, coming generations will at least condemn if not curse us and our ancestors for our want of foresight in so recklessly destroying the American forests. It is wise to remember that even assailable foresight is better than the most convincing hindsight.

At the close of this lecture, on motion, the thanks of the Society were voted to Mr. Steele and also to Mr. Thompson for their able and valuable papers read this evening, and that copies be requested for publication in the Annual Report.

Adjourned to 9 o'clock A.M. next day.

THURSDAY MORNING.

The Business Committee reported on the order of exercises for the day, and a little discussion was had thereon. An invitation was tendered from Colonel Brown for the Society to visit the Soldiers' Home in a body; and, on the adoption of a resolution to accept said invitation, the request was made that the Society name some time when it would go, so that conveyance might be provided. On deliberation, it was decided that time could not be spared for such visit until to-morrow afternoon at 2 o'clock, when the meeting at the hall would virtually close.

The reports of several committees were deferred, in order that Mr. E. E. Barney, of Dayton, might read an essay at this time, it being more convenient for him than at a later hour. He then read an able and exhaustive paper on "The Catalpa Tree," setting forth its botanical character and habits of growth, with the fact that two distinct varieties are found to exist, while it had commonly been supposed there was but one. They differ but little in their appearance and manner of growth, but there is sufficient difference in the bark and in the time of their blossoming for any one to distinguish them. The one known as *Speciosa*, or the early blooming, is found to be more hardy than the other, and hence is adapted for more northern latitudes. But the chief object of the essayist was to call public attention to the great value of the catalpa wood for its durability as well as lightness and strength, and the importance of its being planted extensively for railroad ties and for car building, which latter use was directly in the line of his own particular business.

It was evident that the speaker had devoted much attention, travel, and correspondence to the investigation of this subject, and had gathered an array of facts in proof of the durability and value of catalpa wood. He exhibited to the audience pieces of the wood cut from logs and posts that were known to have lain or stood in moist ground for fifty or more years, and were still sound. It was his conviction, and that of others who had investigated the matter, that the power of catalpa wood to resist decay was equal to that of red cedar. The tree is also of rapid growth and easy culture, and is indigenous to several of the South-western States, though nowhere found in large quantities. Young trees are easily grown from seeds, which can readily be procured, and it is expected that much planting of it will be done the coming season.

[NOTE.—This paper of Mr. Barney's was deemed of much public importance, but is not published in this report, as it was understood it would shortly be printed in pamphlet form for the benefit of the railroad interests. The substance of it has also since been published in various agricultural journals, etc. Much catalpa seed was sown by nurserymen the past spring (1879), and several millions of the young trees will be ready for planting the coming spring.—*Sec'y.*]

HORTICULTURE IN FRANCE, WITH NOTES ON VINEYARDS AND THE PHYLLOXERA IN EUROPE.

BY GEORGE W. CAMPBELL.

Fellow-members of the Ohio Horticultural Society: I find myself announced in your programme for a paper on horticulture in France, and notes on vineyards and the ravages of phylloxera in Europe.

These are rather comprehensive subjects to be brought within the limits of a single essay, and must, therefore, be treated in a brief and somewhat cursory way. My observations upon French horticulture were mainly taken in and around the city of Paris, and as they were connected with the great *International Exposition.*

The space occupied by the Exposition buildings and grounds was about one hundred and forty acres, through which runs the river Seine, leaving the Palace of the Trocadero at one extremity, on the north-west, or right bank of the river, and the main, large building of the Exposition on the other. These two buildings were about half a mile apart, the intervening space on both sides of the river being occupied by ornamental flower-beds, lawns, reservoirs, fountains, statuary, fanciful buildings of various nations, including those of Egypt, Morocco, Tunis, China, Japan, Persia, Sweden, Norway, Algeria, Spain, Monaco, and others. There were also many models of green-houses mixed up with cafes, restaurants, bazaars, and buildings for the exhibition of special inventions or lines of manufactures. But around all these structures, and in every available space, the ground was occupied with groups of specimen shrubs and trees, rare evergreens, flowering plants, single or in masses, and long, ribbon lines of brilliant foliaged plants and flowers. In front of the main Exposition building, toward the river, and facing the Trocadero, were large beds of rhododendrons, planted in close masses and by hundreds, in all varieties and shades of color and variegation common to this magnificent plant, and the effect, when they were in bloom, was beautiful beyond description. The success with which large plants, trees, and shrubs were transplanted, was certainly very creditable to the care and skill of the French gardeners. The day before the opening of the Exposition, more confused or chaotic-looking places could hardly be imagined than many portions of the ground presented. Thousands of trees, and plants of various kinds were lying around in masses, but all their roots in wicker baskets, or carefully tied up in mats. Others were coming in upon wagons and trucks; some large trees, thirty feet or more in height, among the number. Broad spaces of ground were rough, bare, and unsightly. There was a partial clearing up of things for opening-day; and afterwards the planting went on quite rapidly; and a month later the bare ground was covered with a fine, close green sward of rye grass, upon which the lawn mowers were running soon afterward. Large magnolia trees, from fifteen to twenty feet high, were also planted in large numbers; but, although they lived, many partially lost their leaves and failed to bloom perfectly. The planting of models of fruit trees along both sides, and at the west end of the great Exposition building, were more successful. Large trees of bearing size were removed from nursery grounds, trained in all the fanciful shapes for which the French gardeners are so famous, and planted here in March and April. Out of some hundreds of apple, pear, cherry, peach, and plum trees, I did not see more than two or three that had failed to grow well; and many of them were bearing abundantly, especially among the pears and apples. The most of these trees were trained upon light wire trellis, sometimes with the aid of long and slender lath, or rods, to support and keep the limbs in position. Some were trained in flat, oblique fan shape; others with the limbs all horizontal, straight out on two sides, at right angles from the stem. Others again trained horizontal at the base, and then rounded upright in successive rows, forming a goblet-shaped head. Apples trees were planted for a front row, and trained horizontally to a single wire about eighteen inches from the ground. These trees were planted about six or eight feet apart, allowed to grow about eighteen inches high, and then turned at a sharp angle and trained straight along the wire, kept to a single stem. When it had grown of sufficient length, the end was grafted or inarched into its next neighbor at the bent angle, and this into the next, and so on the end, or around a square. No limbs—only short spurs were allowed; but apples were growing upon some of these curious little monstrosities. Others again were grown upright four or five feet, then the limbs made to grow flat like the spokes of a vertical wheel, and upon reaching the circumference of a circle, bent round to form a rim. I noticed one pear tree, Beurre d'Amaulis, about eight feet high, trained flat on light trellis, "*en espalier*," which had thirty-seven large and well-developed pears. This, for a tree moved in March last, indicated wonderful success in transplanting, the tree appearing as vigorous and healthy as though it had grown where it stood.

Some very elaborate training of peach trees upon walls in regular figures, which were first marked out upon the walls, was curious, but could hardly be considered of practical value. Large collections of ornamental foliaged shrubs and flowering plants; deciduous and evergreen trees, sometimes classified according to habit and size of growth, and sometimes in groups of the same families, were very interesting; but a list of the names alone would fill a volume.

These exhibits were made mostly by nurserymen from the vicinity of Paris, and it really seemed as though their entire catalogues were represented in all departments. There were also specimens of climbing and trailing vines; smilax of several kinds; variegated leaved plants in great variety; some handsome passifloras; several varieties of ampelopsis, honeysuckles, and many of the new large-flowered clematis of various colors, which were very pretty and effective. Roses, both grown as dwarfs and grafted upon high standards, were in great variety, both planted in open ground and exhibited in pots. The florists were very fully represented, not only by large exhibitions of bedding plants in the greatest profusion planted throughout the spacious grounds of the Exposition, but by the most extensive display of the more tender exotics under glass. Semi-weekly exhibitions of flowers, and fruits, and vegetables were also had in two long buildings, especially fitted for that purpose, and where the various articles were brought by the exhibiters as they came into perfection during the season. An idea of the extent of the exhibition of plants may be formed from the fact that Mr. Andre Leroy had six hundred varieties of hardy, deciduous shrubs alone, as a single item in his collection.

In fruits and vegetables, I do not think there was at any time a larger or more varied collection than I have seen at our Ohio State Fair in former years, although differing from our exhibition in some respects. In fine plums, cherries, and strawberries their exhibitions were exceptionally fine; also of house-grown grapes, both shown growing in pots, and cut from the vines. But the apples especially would not compare with our home exhibitions; neither the pears, nor the peaches in our favorable seasons. The peaches were all grown upon walls or under glass, and lacked the flavor of our best varieties as grown in America. Pears were also scarce the past season, and comparatively few were in the markets or upon exhibition. In the vegetable department, in the early part of the season, the asparagus exceeded in size any I ever saw in any other country, and I often saw bunches in which the stalks would average an inch in diameter, and exceptional stalks were shown even larger. Cauliflowers, cabbage, and lettuce, and all kinds of salad plants were shown in great variety and wonderful perfection of growth. They also make much use of small, early garden carrots, and of a vegetable they call artichokes, known in England as the globe artichoke, the latter having a large bulbous head about the size and shape of a large onion, but with layers of fleshy scales much like those of a lily bulb. They are used both as a salad, or boiled as a vegetable. The heads are used when green and succulent, the upper part of the stems and the base of the scales being the portions eaten. The flavor is something like that of the cauliflower. In the neighborhood of Paris the roots live in the ground during winter, and plantations are increased by taking off side-shoots in fall or early spring. A plantation of artichokes remains bearing from three to four years. It might be a profitable and desirable vegetable in the South, but would probably not endure our severe winter freezing.

The melons grown about Paris seem to be nearly all of the cantaloupe family, but quite unlike those grown in this country. They are usually round and flat, in shape and appearance like some of our rough, yellow summer squashes—not netted, but knobby. They are yellow-fleshed, and rather inferior in flavor; not to be compared with our green fleshed cantaloupe melons for richness or delicacy Watermelons seem to be very little grown or used; and nearly all I saw in France, or on exhibition, I think were sent from Turin, in Italy. Potatoes, as a rule, were also quite inferior in appearance to those grown in this country, and they seemed to me inferior in quality. There were, however, no considerable collections shown at any time that did not contain the American Early Rose Several of the other new American varieties were among the successive exhibitions of potatoes—Snowflake, Brownell's Beauty, Early Peachblow, and Eureka, appearing to very good advantage, and superior to most of the French and English varieties shown with them.

One noticeable feature of the horticultural department was some very finely executed models of fruits, in natural colors, in upright glass cases, shown by the Central Horticultural Society of the Lower Seine, and the Central Horticultural Society of France. Four hundred and twenty six specimens of table pears, all named and classified as to their season of maturity, from July to March; 34 new varieties of promise, produced from seed by members of the society, and 85 specimens of pears for cooking purposes; 238 varieties of table apples, 6 varieties of new apples; 19 of peaches, 7 of apricots, 40 of cherries, 32 of plums, and 2 of quinces. These were all admirably modeled and artistically colored, and very creditable. In addition, there were models of 425 apples for cider, and these were not only carefully labeled as to name, but had cards giving a description and analysis of the character of each. I copied one as a specimen: "*Girard*, fruit sweet, very good; cider agreeable, pleasant; ripe for press, 1st to 15th October; juice high colored, perfumed; density, 10.75; alcohol, 10 per cent.; alcoholizable sugar, 175 grams per kilogram, or 17½ per cent.; tannin, 2½ per cent.; tree very fertile, but not over bearing," etc. Besides the 425 varieties thus described, there were 36 new sorts not yet analyzed. Among a large and fine collection of plums exhibited on the 16th of August was a new variety, so remarkable in size as to be worthy of special mention, as it will probably be offered for sale in 1879 at high prices, and with high recommendations as to quality, productiveness, and all the other excellencies, as a description to this effect accompanied the fruit. In size it was truly enormous, about twice the size of Goliath, and fully as large as full sized hens' eggs; color black; shape oval or egg shaped. It is named *Merigon*, which I believe is the name of the originator. Upon testing its quality, however, I found it not above third rate, and the French committee pronounced it "very bad." Croux & Son have the stock, and were the exhibiters.

Very large quantities of fresh figs were on exhibition throughout the season, and they are grown very successfully in open culture in the vicinity of Paris. The trees are originally planted in a slanting position, so that they may be bent down and covered with earth during the winter; and I have no doubt the same method and care would render fig culture successful in Ohio. They are kept low and bushy, and all the shoots so disposed as to be laid down and protected by an earth covering upon the approach of severe cold. The favorite varieties seemed to be Violette Dauphin and Blanche d'Argenteuil, the former dark purple, the latter a light yellowish green.

The large, or principal building of the Exposition was nearly half a mile long, and 380 yards in width, covering an area of something over 60 acres. There were no horticultural exhibitions in the building proper, but there were through the center of this space, running the length of its longest diameter, two wide avenues, which were open and uncovered. Between these two avenues, running the whole length of the Exposition, was the space devoted to paintings, sculpture, and fine arts generally, the central portion a large, highly ornamental building, filled with art contributions from the city and called the "City of Paris." These avenues, separating the different sections of the main building, were lined on each side with handsome borders of flowers, generally artistically and tastefully displayed. A narrow belt of short, green turf in front, then a row of echeverias, or some low-growing ornamental plant; then inside and extending to the walls of the buildings a mixed collection of plants, gradually rising from the front, largely composed of brilliant-colored zonale geraniums, double and single; at regular intervals silver-leaved geraniums were introduced, and on each side of the various side entrances on these avenues, tall-growing palms or cycads. At intervals of six or eight feet in these long borders were larger plants, breaking the monotony of the lines, of hibiscus grandiflora, musas, ricinus, smaller palms, the intervening spaces and center filled with geraniums, fuschias, yellow calceolarias, white pyrethrums, heliotropes, and assorted begonias. Every nook and corner, as well as the larger squares and spaces between the buildings and sections on the "Street of Nations," as one of these avenues was called, was filled with groups of plants and shrubs, and tasteful flower beds in various styles of ornamental planting. A description of one of these flower beds will give a general idea of their character. At each end of the pavilion of the "City of Paris," before mentioned, were two long squares separated by a walk between them. These squares were first edged by a low, ornamental iron railing, then a belt of close, short grass a foot wide, then a row of koeniga maritima variegata, followed by a row of dwarf-growing, brilliant scarlet geraniums, then a row of taller, rose-colored geraniums; at the center a broader band of white pyrethrum, broken at regular intervals by taller cannas and fuschias planted alternately; on the other side of the same border, pyrethrums, geraniums, and koeniga maritima completing the line; the inside of the squares a grass-plat, with a large, ornamental vase, containing a handsome palm tree in the center. Great skill was also displayed in several portions of the Exposition in the building of artificial rock-work, forming grottoes, caves, aquaria, etc., made of cement and a rough, porous, hard stone found in the neighborhood, and which is very durable. Some very pretty effects were produced by planting trailing vines and forming cascades of water running over and falling from these rocks into small basins containing aquatic plants. In the parks around Paris were some of these artificial works which were many years old, and apparently as perfect as when first made. The more equable climate and comparatively moderate winters make these things much more successful than in this country. Many plants stand out there during the whole season that have to be housed here—rhododendrons, aucuba Japonica, euonymus, and many of the ornamental evergreens which are not hardy here; the Deodar cedar, and the Sequoia Gigantea, or Big Tree of California, and many of the new and beautiful variegated-leaved ilex or holly, which are only half hardy in our climate.

The prominent feature in French horticulture seemed to be almost infinite pains-taking, and special care of everything; and it really seemed as though every individual tree and shrub and plant in and about the city and in the Exposition had some one whose duty it was to look after it and care for its special wants and requirements. In the large parks, and squares, and everywhere, at the angles of street-crossings and intersections, around the public buildings, fountains, and statues, wherever there was room for a flower bed one was sure to be planted, and so nicely kept that a faded flower or decayed leaf was rarely seen. Even in the grounds appropriated to the animal shows one of the first things was the formation of a green lawn, in which were large oval beds, made gay and attractive with brilliant flowering plants, and around the inclosure and the exhibition sheds, tents, and buildings large plantations of ornamental plants and shrubbery.

The market gardens about Paris are also remarkable for careful culture and wonderful productiveness. They are generally small, containing from one to three or four acres, and those near the city are generally surrounded by high stone walls, upon which are trained peaches, pears, and grapes. Numerous hot-bed frames, and great numbers of large bell glasses are found in all these gardens for growing and protecting early vegetables, and are used constantly from October to May. The sashes for many of the frames are of light cast-iron, with handles at the ends, making them very convenient and durable. The bell-glasses are very large, usually about 16 or eighteen inches in diameter, and are principally used for growing lettuce and other salad plants for winter and spring market. They are also very useful for striking cuttings of various kinds, and for growing seedling plants in early spring. It is really surprising that these gardeners can be successful, for when near the city they pay as high as $100 to $125 per acre for rent per annum But they cultivate every inch of the ground, and have often on the same ground two or three crops planted, which are taken off in succession. They plant closely, manure highly, cultivate perfectly, use a great deal of water, and keep the ground constantly occupied, both winter and summer. I was told they managed to take as many as eight successive crops from the ground in a season, with various kinds of salads, radishes, cauliflowers, cabbages, etc.

The French must certainly, as a nation, be a flower-loving people; for in the great markets of Paris there are always large spaces devoted to the sale of cut flowers in great profusion. Then there are in several quarters of the city, regular flower-markets on stated days of each week, where every variety of flowering plants and shrubs and vines, from the most common bedding plants to the rarest treasures of the green-house, may be had, as well as cut flowers and enormous bouquets for decorative purposes. In all private gardens, too, whether of the man of wealth or the humblest cottager, the flower-beds are always present; and even at the country and suburban railway stations there are almost always handsomely kept flower-beds, and sometimes long ribbon lines of gay flowers and bright foliaged plants along the sides of the track for considerable distances, near the towns.

I fear I have occupied too much time with this branch of the subject, and will now speak briefly of my impressions of grape-growing and the vineyards of France and Italy.

VINEYARDS AND GRAPE CULTURE.

In the neighborhood of Paris, the larger portion of the grapes are grown for table use, and are either grown under glass or upon walls. A few varieties are grown in open vineyard culture—early ripening kinds, white and black, and of small size, not larger in bunch and berry under ordinary culture than the Delaware or Clinton. The early Madeleine (black) and Blanche Madeleine Royal (white), Hative de Gêne (black), Early Malingre, and Early Black of Marseilles were some of the varieties that were grown in open culture in gardens and small vineyards; but grape-growing in the neighborhood of Paris did not impress me as being less difficult than at home; and, except that their winters are less severe, I do not think they have equal advantages for success with grape growers in the State of Ohio; and with the same care and cultivation I believe we could grow even the same varieties with equal success. A very large collection of grapes from all quarters of the globe were growing in a trial garden at the Garden of Acclimation. A more utter failure I never saw, in the worst season, in this country. The grapes were mildewed, cracked, and rotted. A perfect bunch could not be found. One of the gardeners told me it was caused by neglect to use sulphur at the proper time, and that he thought it might have been prevented. I afterwards saw in private gardens many grapes in the same condition of the kinds I have before named. The season was unusually wet, and this measurably accounts for the failure, for scarcely a day passed during the summer without rain, and there were a few days of extreme heat also. Upon the walls, where the grapes were protected also by a projecting ledge or coping overhead, they seemed generally healthy wherever they were well-cared for; and care here means a careful training of the vine upon the walls so that the shoots are not crowded, thinning out of the bunches that the vines shall not overbear, and also a careful thinning of the berries from the clusters to prevent crowding and cracking. Sulphur is also used freely to prevent mildew. The phylloxera is said not to have been observed within a hundred miles or so of Paris.

The most celebrated vine-growing district in the vicinity of Paris is the celebrated Thomery, near Fontainebleau, and where the Chasselas Fontainbleau grapes are grown in great perfection. They are grown either upon high, white-washed walls, with projecting copings above, or on lower trellises where they receive protection from the walls, which are the main feature in the vineyards at Thomery, running in all directions, and usually from eight to ten feet high. The trellises between the walls are also provided with means for protection over head, either by boards or a kind of bitumenized cloth. These projections and coverings were movable, and could be used or not as occasion required.

At the School of Horticulture, at Versailles, which is under the direction of the French government, there are also large gardens under the same charge, which formerly belonged to the Palace of Versailles Here, also, were high walls in every direction, all utilized by closely trained grape-vines, and a few peach and pear trees. The grape-walls were about ten feet high, a movable stage or platform on wheels being used for attending the upper portions of the vines. The impression made upon me was, that if *half* the care and attention were bestowed upon grape-growing in this country, there would rarely be a complaint of failure with our hardy varieties.

I afterward visited one of the most celebrated wine-producing districts in Southern France in the neighborhood of Montpellier, a region where grapes and wine are the principal product, but which is threatened with entire destruction by the persistent and aggressive attacks of the phylloxera vastatrix. The modes of culture were here entirely different from those about the city of Paris, corresponding to a different climate. With very little rain-fall, and a mild and equable temperature, vines were closely planted without stakes, trellis, or support of any kind, and never allowed to grow more than three or four feet high A large stub or stump at the base, usually from a foot to eighteen inches high, and with two to four short, stubby arms, from the ends of which the fruit-bearing shoots are grown, the fruit hanging in clusters about the stump and near the ground. These shoots appear to have been kept pinched or shortened during the growing season; and in the spring or fall pruned back within a few eyes of the self-supporting stump. No tying or special training appeared in any case. These vineyards were in every intermediate condition, from moderate fruitfulness to absolute devastation; and on all sides were abandoned vineyards grown up with weeds, the dead and blackened stumps marking the path of the destroyer. Sandy soils appeared to resist attack longer than retentive clay; but it was said to be only a question of a little longer time when these, too, would succumb. I saw many vineyards where the vines were being taken out; some grubbed up with mattocks; others drawn out with a kind of miniature stump-puller, with a windlass and hook.

At the city of Montpellier there was held a congress of grape-growers, to which there were delegates from Bordeaux, Marseilles, Toulon, and all the wine-growing sections of the south of France bordering the Mediterranean, called the "Midi." There were also delegates from Italy, Spain, Hungary, and Austria, and, perhaps, other sections also. The object of the meeting was announced to be the investigation and study of the American vines, and I could not help noticing in the large assemblage the deep interest felt in the subject, and the favor with which the confident statements were received that these American vines afforded a solution of the phylloxera question, and a remedy for the evil that threatened the ruin of their grape and wine interest. While they appeared to me in a strait little short of desperate, and ready to catch at any proposed remedy that promised success, the testimony certainly seemed to warrant ground for their hopes, as narrated by those who had longest and most perfectly experimented, both by grafting the French grapes and by growing the Americans on their own roots. That the present condition of their vines is wholly owing to the injury by the phylloxera I can not quite believe, although it is evidently the last or present and palpable cause of their death. Their habitual treatment, and, to some extent, want of culture, has, I believe, weakened the vines in all their older vineyards, and prepared them for the attacks, and inability to resist the effects, of the phylloxera. A grape vine, whose natural habit is to climb and make long and twining shoots, is planted in a soil not too good at first, crowded into a circumscribed space with hundreds of its fellows three or four feet apart. Then, instead of allowing a natural development, it is cut down within a foot of the ground, and the main stem never allowed to grow any higher. No support is furnished for the slender shoots, and the grapes are borne around the top of this little stub for year after year. A vineyard of this kind looks at a little distance like a field of closely-planted currant bushes. I am satisfied, from various experiments which I have made, that this excessive cramping and pruning of the vine has a tendency not only to weaken the growth, but to destroy the roots, and that this essentially vicious treatment has so weakened their constitution that they fall an easy prey to the invading insect destroyers. One of the delegates from Spain took the ground that the phylloxera was the *effect* of weakness in the French vines, and not the *cause* of their destruction. While his arguments were probably incorrect, there certainly appears some ground for his opinion. The interest of the discussions was fully kept up for three days, the conclusion being an enthusiastic indorsement of the use of American vines, and a settled belief in their success in enabling their own vines to resist the phylloxera when grafted upon the American roots. They say, however, if this grafting process fails, they will then introduce the American vines themselves, and make their red wines from them. I noticed after leaving Montpellier, going eastward along the borders of the Mediterranean, vineyards in every imaginable state of dilapidation; in some cases nothing but rows of black or brown stumps entirely dead, and others partially killed, with occasionally a weakly and yellow looking individual in the last stages of dissolution. A few new plantations, evidently of American varieties, were looking bright and flourishing. The greater hardiness of the Americans may enable them longer to resist, but if this same mutilating and dwarfing habit is pursued, although the evil day may be put off somewhat longer, I believe it will as surely come when their weakened condition will enable the phylloxera to overcome and destroy them also. These people have cultivated the vine so long, and the business has been handed down from father to son in such unbroken succession, they feel incapable of substituting any other agricultural products for their favorite grapes and wine. The appearance of the country indicates great former prosperity; the houses nearly all of stone, stone walls around their dwellings and gardens, for stone is plenty and labor cheap. They have quite a diversity of soils, some brown, rich loam, gravelly clay, reddish clay, and in many cases underlaid by a natural drain of gravelly drift. The average soil would be called good anywhere, and the climate dry and equable, rendering it specially adapted to grape culture. Trials of growing wheat, they say, are unsuccessful, and some of them also say if their grapes fail them they will have to expatriate. There is a general disbelief in the practicability of the chemical remedies proposed, both on account of inefficiency and great expense. As far east as Marseilles, and for some distance beyond, the vines were still looking weak and badly; on the rocky hillsides, planted on terraces, occasionally they presented a better appearance, but either in sandy soil or permitted to grow more luxuriantly. Vines permitted to grow on walls or trained in long shoots seemed always better.

Practical vineyardists regard the introduction of American vines as the only expedient which promises relief in their present emergency, for they have found some kinds which appear not only to grow and flourish, and bear large and healthy crops in spite of the phylloxera, but to give renewed health and vigor to their own native varieties when used as stocks upon which to graft them. I visited many gardens, vineyards, and nurseries where these various experiments are being made, and it seems, both from my own observation and the testimony of others, that several of our American vines, especially those of Southern origin, such as the Herbemont, Lenoir, Pauline, and the Jacquez especially, will succeed admirably in this region. The Jacquez is thought to be the same variety which was sent to Nicholas Longworth years ago, in a cigar box, and which was for awhile cultivated and known as the "Ohio" or "Cigar Box" grape. Although it never acquired much popularity in the United States, and is now scarcely to be found in the Eastern, Middle, or even Southern States, it seems to be the grape of all others most valuable, and best suited to the emergency now existing in France. The foliage dark green, rich, and luxuriant, and the fruit without a blemish; and native vines grafted upon it beside the same kinds growing on their own roots, were vigorous and healthy when the latter were dead and dying. In one place, though, I saw a case where an experimentalist had grafted the Jacquez upon French stocks, and the Jacquez was also, in this situation, equally vigorous with its companions upon their own roots. The conclusions from this fact, if it be one, might render the question of the effects of the root upon the graft a little mixed. But the current is all one way, and the enthusiasm in favor of the American vines reminds me of the flush times in America when the "grape fever" was at its height, and when grape-growing was the all-absorbing question in so many parts of this country. At the experimental garden of the School of Agriculture they have a large and interesting collection of vines from various countries, but more from America than anywhere else. All our older and well-known varieties, many of Rogers' and Underhill's and Arnold's hybrids, besides the different types of our wild native kinds, the Riparia, Cordifolia, Labrusca, and Æstivalis, were all here represented. The Concord, Hartford, Rentz, Franklin, and grapes of that class did not seem to be flourishing as well as those of the Southern type, partly, I have no doubt, because not as well adapted to this peculiar locality, but also on account of extreme drought which prevailed. But I could not help being impressed with the general health and vigor of the American varieties, both where planted in large numbers and also in single specimen plants. The Clinton has been quite extensively planted in the way of experimenting, but does not appear in all cases healthy, the foliage suffering from a kind of black mildew which I have often seen at home.

As a rule, the French people do not like the flavor of our wines, though they admit some of them to be good, and there appear to be many who consider our vines only valuable as phylloxera-resisting stocks for grafting. Others are willing to make an exception in favor of such varieties as the Jacquez and Norton's Virginia, Herbemont and Cynthiana, as a kind of *dernier ressort*, in case the grafting process should finally prove unsuccessful, and as a substitute for the cheap and popular red wine, to which their people have become accustomed, and which they regard as one of the prime necessaries of life.

From all the observations I have been able to make, it certainly appears that the light and cheap non-intoxicating wines of France take the place, with the common laboring classes of the country, of the vile corn whisky consumed by so many of our people in America, and for some reason there is far less drunkenness in all the regions of France that I have visited, than in our blessed land of freedom.

Italy, however, seemed to be a kind of paradise for the lazy grape-grower, and where the vines come nearer to growing and taking care of themselves than in any other country. While there were very few vineyards—that is, where the whole ground was occupied by vines—there were still grapes everywhere bordering the fields and roadsides, and running in rows through the fields, leaving spaces from one hundred to two hundred feet between the rows of vines, where farm crops were cultivated. All these vines were grown upon trees, which appear to have been planted for their support. A vine is usually planted on each side of the tree, running up and occupying the whole head of the tree, and then long shoots are trained laterally to the next tree, ten or fifteen feet away, the grapes and vines hanging in festoons along the lines in the most graceful manner. Dwarfish trees, headed rather low, were mostly used, and of various kinds.

Occasionally fruit trees were used, but they seemed to prefer elm, maple, thorn, or mulberry. And when the distance between trees was considerable, stakes were placed to support the vines which were trained from tree to tree. Not only here, but in Switzerland, about Geneva and Lausanne, and in all places where the vines were allowed to grow and spread themselves in accordance with their natural habits, they appeared vigorous and healthy, bearing abundantly, without any visible indications of failure. And although the delegates to the meeting at Montpellier reported the phylloxera as having been found in Italy, Spain, Germany, and in Hungary, there was no report of such devastation as appeared in Southern France, where the close planting and short-stub system prevailed.

I made some inquiry about the oidium which a few years ago was regarded as the great obstacle to successful grape-growing in Europe but the reply was, that it was so easily controlled by the use of sulphur, that it was regarded as of no moment in comparison with the great and overwhelming danger from the phylloxera.

DISCUSSION ON GRAPE CULTURE AND ROT.

Secretary Bateham commenced this discussion by giving a brief summary of the condition and prospects of grape culture in Ohio, and the facts that are known in regard to the prevalence of rot, and its possible causes and means of prevention. He said, in substance, it is shown by the assessors' returns that there are now about 8,500 acres of vineyard in the State, which is about 2,000 acres less than there were six or seven years ago, notwithstanding it is shown that new planting has all that time been going on at the average rate of 1,000 acres per year, thus showing that over 1,000 acres of vineyard are being destroyed each year. I know that these statistics of the assessors are not very exact or reliable, but the main fact stated is corroborated by personal observation. Many vineyards in the northern as well as the southern parts of the State have been destroyed on account of the repeated failures of the crops, caused chiefly by the rot; and this does not include the tens of thousands of vines in home gardens which have become useless from the same cause. Add to all this the losses that are sustained by the partial or entire failure of the crops where the vineyards are allowed to remain, and we can see that this is a grave matter for our consideration.

Being myself one of the sufferers, in some degree, I have for several years given much attention to the observation and gathering up of facts that have a bearing upon the cause or prevention of grape rot; and knowing that others present have done the same, and can add to the interest of this discussion, I will state as briefly as I can the principal facts that are generally known, so that time may not be wasted by their repetition, and that new facts may be elicited from grape-growers at this meeting.

Twenty or thirty years ago the rot was prevalent among the Catawba vineyards around Cincinnati, and finally resulted in their general ruin.

The disease also gradually extended to other parts of southern and central Ohio, and portions of States adjacent, but not in such manner as to give rise to the belief that its spreading was by any sort of contagion. It also commenced gradually to affect other varieties, as the Ives and the Concord, which had before been exempt from the malady; and of late years these varieties have seemed as liable to its attack as the Catawba.

It has long been observed that wet seasons, especially much rain in June or July, are most certain to bring rot, while those of opposite character cause exemption. It is also found that flat and moist soils are most liable to the disease, and hill-sides, especially if clayey and so managed that summer rains pass off quickly without soaking to the roots, are most exempt.

It is also found that vines trained against buildings, especially on the sides least exposed to rains, and where protected by cornice above, are generally exempt from rot; and on the same principle, a coping of boards on the top of a trellis, by sheltering the vines from rain and dew, affords partial protection.

A crop of clover, rye, or other vegetation covering the surface of the ground during the hottest part of summer, has been found to lessen the liability to rot—perhaps by absorbing moisture from the grape roots, or, it may be, simply preventing an excess of heat by reflection from the naked soil. If from the latter, it is probable that mulching the surface with litter or saw-dust would be better than any growing crop.

Lack of fertility in the soil, or the absence of some particular element required by the grape, has been suggested as a probable cause of the rot; but experiments have been tried with various kinds of fertilizers, with no beneficial results; and in fact, over-luxuriance of the growth of vines seems only to increase the tendency to rot. Hence, also, the theory that rot is induced by phylloxera or lice at the roots causing weakness of growth, is not sustained by the facts observed.

Lastly, it is found that the rot almost invariably commences during hot and sultry weather, after rains, when the barometer is low, and there is lack of sunshine and wind—when milk sours and meat spoils quickly, and mildew appears in cellars and closets—pointing strongly to the conclusion that the disease is caused, partly at least, by a lack of evaporation and elaboration of the sap, of which there is a superabundant flow at the time. As further evidence of this, it is found that the disease ceases to spread as soon as the barometer rises and bright sunny weather occurs.

Mr. Kramer, of Dayton, said he pruned his grapes in such manner as to have most of the foliage on the upper wire of the trellis, and the fruit underneath—the object being to protect the fruit mainly from dew and rains. He believed that the liability to rot was lessened by this practice. He also sowed his vineyard with oats, after cultivating in spring, and plowed the crop under before the oats ripened. Perhaps it would be better to mow the crop and let it remain as mulch.

Mr. High, of Middle Bass, said there was often trouble with rot on the Islands in wet and hot seasons. They used the sulphur remedy with advantage for mildew, and found it some benefit as a preventive of rot, but not much. Where land was rich he sowed rye in his vineyard, mowing the crop in June and letting it lie as mulch till danger of rot was over. He was testing the effects of various fertilizers on his oldest vines as a means of preventing mildew and rot, but could not as yet see any beneficial results.

Mr. Ohmer mentioned having destroyed several acres of thrifty Concord vineyard on his grounds, in consequence of repeated failure of the crops by rotting. He further stated that at a recent meeting of the Lucas County Horticultural Society, at which he was present, a member said he found the grapes escaped the rot on half of a trellis where the ground beneath was covered with tomato vines, while on the half where the ground was bare the fruit rotted badly. It should also be observed that there is not any general increase of the disease throughout the State. We found, for instance, in the vineyard of Prof. Koch, near Toledo, very little rotting of the fruit had occurred this year, where it was quite bad the previous season. He also alluded to the accounts of the failures of the grape crops from this cause, in some of the large vineyards on the Detroit River.

Several other speakers mentioned facts in corroboration of what had already been said. Mr. Snyder, of Lancaster, stated that he had very little trouble from rot or mildew, and he thought it was mainly because his vineyard consisted of varieties that were adapted to his soil and location. He thought that most people could grow good grapes of some kinds successfully, if they would take pains to find out by experiment what varieties were suited for their soil and climate.

Mr. Bateham said, in reply, that he had been experimenting for a dozen years or more with over twenty varieties, and he found at least seven-eighths of them were liable to mildew or rot, in some seasons, and the others were hardly worth growing. He then read several letters from grape-growers in other States speaking of the prevalence of rot for some years past, and the earnest desire that some means of its prevention may be discovered. He also said, that having heard of the success of a gentleman at Cincinnati in protecting grapes from insects and disease by covering the clusters with cheap paper bags, he wrote him a letter asking further information on the subject. He felt gratified in being able to present the Society the following interesting letter, in reply to his inquiries, from W. W. Scarborough, Esq., a well-known citizen and amateur horticulturist, of Cincinnati:

THE BAG METHOD OF PROTECTING GRAPES FROM INSECTS AND DISEASE.

CINCINNATI, *November* 26, 1878.

DEAR SIR: I have received your favor of the 25th inst., inquiring about the results of the new method of protecting grapes from disease, etc., by inclosing the bunches in paper bags. I have pleasure in answering your inquiry.

Hearing, in 1876, that my neighbor, Mr. Gottlieb Meyer, had in that year tried successfully this experiment, early in the summer of 1877, just after blossoming had been accomplished and the young grapes fully set, I inclosed in paper bags 2,500 bunches, chiefly of Concords and Catawbas, with some few bunches of Delaware, Iona, and Isra ella, and gathered in the fall 2,450 bunches therefrom of perfect and magnificent fruit. Of the fruit that year not bagged there was probably one-half destroyed by rot, with a further loss by mildew, birds, and insects.

This year I had 7,500 bunches inclosed in bags, with substantially the same result to the kinds or varieties of grapes before mentioned. Some two hundred bunches of the Hartford Prolific variety did not do as well as the other varieties. There was less rot this year in our open vineyards than for many years past, but yet there was disease, although diminished, and the same loss by birds and insects to the unprotected bunches, which have heretofore existed.

The bag used is the common paper pasted bag used by the grocers, made of yellow manilla paper, and six inches wide by nine inches deep, and fastened to the bunches by two or three pins. These bags, if made of good quality of paper, will last for two years' use, as will the pins also be good for the second year.

The quality of the fruit is improved by its isolation in the bag—it is richer in saccharine matter, and of higher flavor. The cost of bags, pins, and labor is about one-third of a cent per bag on the small scale of my experiments.

Mr. Meyer, who I have mentioned before, tried this year the muslin bag, with what result I have not heard.

In some old German legend or history it is written that the old German emperors had their tables loaded with magnificent bunches of grapes grown in glass bottles. We have arrived at the same result as to quality with the simple paper bag—great big-shouldered bunches of perfect fruit, a delight to the eye and a feast to the palate. I inclose one of the bags used this year as a sample.

Very respectfully, W. W. SCARBOROUGH.

In a subsequent letter Mr. S. reports favorably of his neighbor's experiment with the muslin bags. They are made of common unbleached cotton cloth, and the chief advantage is, they are expected to last quite a number of years; they can also be more readily pinned around the stem of the grape clusters. [See further remarks on this method of protecting grapes, and a letter from J. M. Younglove, of Kentucky, in the latter part of this report.—*Secretary.*]

ESSAY ON PEAR CULTURE.

BY N. OHMER.

Mr. President and Gentlemen:

In the circular programme of this meeting, issued by the Secretary, I noticed that I was put down to open the discussion on pears and pear culture. I do not know why I should have been selected from among so many present more able than I am to handle the subject, unless it was because I have some three to four thousand trees in bearing of this favorite fruit. It was probably natural for the Secretary to suppose that I ought to know something on the subject.

It is now twenty years since I planted my first pear orchard, which consisted of 420 standard trees. Having then, as now, a great fondness for tree and vine growing, and knowing but little as to what varieties to plant, I called on one of our nurserymen to have him make a list of such trees as would do well in this region, and the following varieties and number of each were planted; 40 Bartletts, 20 Flemish Beauty, 20 Louise Bonne, 30 Oswego Beurre, 10 Dearborn Seedling, 20 Doyenne d'Ete, 10 Belle Lucrative, 10 Seckel, 10 Swan's Orange, 10 Urbaniste, 20 Rostiezer, 30 Golden Beurre, 30 Vicar of Winkfield, 20 Bloodgood, 20 Beurre Easter, 10 Steven's Genesee, 20 Madelaine, and 30 Tyson; too many varieties by half. Of these eighteen varieties then planted, I will report what I have left and how they behaved.

Bartlett's—Every tree still standing and all full of fruit this year, and have borne more or less fruit every year since the trees were four or five years old. Flemish Beauty —Every tree alive and doing well, bearing almost annually. Louise Bonne—About one-third dead; an annual bearer. Oswego Beurre—Every tree standing, bearing more or less annually, although but little money in them. Dearborn Seedling—Trees all alive; fruit handsome and good, but too small to be profitable. Doyenne d'Ete are about all dead. Belle Lucrative, all standing and bearing more or less delicious fruit every year, but not profitable; does not sell well, ripening in a bad time. Seckel, one dead tree; others doing well and bear annually; though small, always sells well.. Swan's Orange, one-half dead; bear annually, fruit large, not first rate, but sells well. Urbaniste, all standing; healthy tree, but poor bearer. Rostiezer, all trees alive; an annual bearer, a profitable variety. Golden Beurre, all trees in good health, a shy bearer. Vicar of Winkfield, eleven trees yet alive; is a great bearer; fruit, when well ripened, sells readily at good prices. Bloodgood, one-fourth of the trees dead, fruit good, though does not bear sufficiently to be profitable. Beurre Easter, one-third dead, wish they were all dead, never sold one dollar's worth of them. Steven's Genesee, all gone. Madelaine, ditto. Tyson, three dead, fruit excellent, medium in size, but not a good bearer with me, would plant no more.

I have given you the result so far, of the death rate, and my estimation of the value of eighteen varieties of my first planting of pear trees. Being a Frenchman, and fond of this delicious fruit, I was not satisfied with four hundred and twenty trees, and feeling certain that pears would pay, if the right varieties were planted in the right soil, and treated in the right manner, I concluded to plant orchard No. 2, containing 564 trees, all standards, as follows: 144 White Doyenne, 150 Bartletts, 96 Louise Bonne, 24 Flemish Beauty, 108 Vicar of Winkfield, and 36 Lawrence. This orchard was planted eighteen years ago. The White Doyenne cracking so badly I cut down about one-half, and grafted the balance with Bartletts. Of these and the 156 Bartletts in this orchard, there are about twenty dead trees. Those alive bear more or less annually. The Louise Bonne did well up to within three years. They having stood in grass so long, I concluded to give them a plowing. The result was, that the following year most of the trees were affected more or less with blight. Quite a number are now dead, others have most been cut back, disfigured, and dying gradually. There is scarcely a sound tree in the lot. Flemish beauty are all dead. Vicar of Winkfield all dead. Lawrence, only two trees dead. Others doing well, bearing fruit annually, that sells at good prices. So much for orchard No. 2.

Nine years ago I concluded to plant orchard No 3, consisting of 700 standard Bartletts. From my past experience with Bartletts, I was of the opinion that those planted before branched out too low, two or three feet above ground, and when in fruit the lower limbs bending down to the ground. I therefore trained this orchard with limbs higher up, four or five feet above ground, and there is where I missed it. My trees made good growth the first year; the following year the bark on the body of many of the trees began to show dark spots, especially along the southwest side. At first I cut this out, but found but little good resulted; some of my trees began to die. Of course, I felt discouraged, as I intended making this a model orchard. I continued their cultivation for five years, losing more or less trees each year, until about one-sixth of them were dead. This orchard has now been in grass and clover four years, since which I have lost but very few trees; none this, nor last year. This year the trees were very full of choice pears, and now make a good show for fruit next year. I have no doubt the exposure of so much trunk when young, to the influence of heat and cold, was one ot the causes of so many dying.

Heard and read a great deal, some years since, about dwarf pear trees, mostly in their favor. Seven years ago I resolved to plant my fourth orchard of pear trees, this one to be of dwarfs. Wanted to try them, and so gave my order for 1,500 trees, varieties as follows: 300 Louise Bonne, 400 Beurre d'Anjou, 400 Duchess, and 400 Doyenne Boussock. They were planted according to directions, ten feet apart each way. My trees grew well the first year. The second and third years the growth of the Louise Bonne and Doyenne Boussock was not satisfactory, the Duchess and Beurre d'Anjou all the while doing their very best to excel one another in their growth I ordered seven hundred more Duchess, which were planted in the place of the Louise Bonne and Doyenne Boussock, that have been taken up, all of which have done well so far. It would have done you good to have seen this orchard this year. The trees were all, old and young, loaded, some to breaking down, with the weight of fruit, equaling the celebrated California pears in size, and superior in quality. So far, I am well pleased with my experience with dwarf pear trees. Don't know how long it will last. I lost some of these (especially of the last planting), about twenty out of the seven hundred, but not so many of the first eight hundred planted. These have been in clover now three years. The last planted are still being cultivated.

I have a fifth orchard, of about 400 standard pear trees, of Bartletts, Louise Bonne, Flemish Beauty, Lawrence, and Rostiezer. The result is about as with others of the same varieties mentioned above.

I have given you, as well as I could, my experience in pear culture, and how I succeeded with different varieties. Now I will give you my opinion as to the varieties most profitable to grow, and what kind of soil to grow them in. In the first place, if I did not have deep and well underdrained, naturally rich clay soil, I should plant no more pear trees than I wanted for home consumption. When one has such a soil, I would plant of the following varieties and proportion (provided I had room) in an orchard of 1,000 trees, all standards: 150 Bartletts, 150 Beurre d'Anjou, 150 Duchess, 150 Lawrence, 100 Beurre Clairgeau, 50 Howell, 50 Flemish Beauty, 50 Seckel, 50 Rostiezer, 50 Louise Bonne, and 50 Sheldon.

Now as to the pear blight. What causes it, and what is its cure? My answer is, as many wiser men than I have answered, I don't know. I do know its effect, as many of you know too well. I have watched it carefully, but it acts so differently in its attack on a pear tree, seemingly at times so mysterious, that I can give you no satisfactory result of my investigation. I do know, however, that the trees most subject to it are those that grow the most rapidly. I don't know that I ought to complain, as I have been rather favored, as you must have observed in the above report. I have lost but a small proportion in comparison to the number of trees I have.

In orchard No. 1, which is located in front of my house, planted twenty years ago, out of 30 Vicars that I planted, 11 are yet alive, and doing the best they can in producing fruit annually; whilst in orchard No. 2, planted eighteen years since, out of 108 Vicars planted, none are now living. This orchard is situated at the rear end of my farm, where the soil is equally good. Then again, out of 20 Flemish Beauty trees planted in orchard No. 1, all are yet alive and doing well, whilst in orchard No. 2, where 24 Flemish Beauty trees were planted, all are dead. One other peculiarity in orchard No. 2—there is a space of about 100 square feet where 20 Bartlett and White Doyenne trees, of original planting, died when yet young. All were replanted, and only four are now alive, whilst other trees all around this space have done well; no apparent difference in the soil—all on the same level. Adjoining this orchard No. 2 is situated my dwarf orchard, and immediately opposite this ill-fated spot ten dwarf trees have died, whilst others around are doing well. I am not scientific enough to find out the whys and wherefores. May be some of you can.

In planting a pear orchard I never use manure upon the land; think it is injurious. I take the land as it is, plow it deep, plant my trees an inch or two deeper than they were in the nursery. I usually plant corn in a new orchard for three or four years, consequently keep the land well tilled. The following spring I sow (after putting my ground in good order) red clover; the following season I cut the first growth, when going out of bloom, for hay, and allow the second growth to die and decay upon the ground, which makes a good mulch for my trees. I said that I do not plant deep. True, but in after plowing I throw up the dirt toward the trees. I think it a bad practice to dig a deep hole, two feet deep, for instance, as many do, in which to plant a tree. If your sub-soil is porous, deep black loam, or gravelly, you may do so, but underlying most of our clay soils there is a stiff yellow or whitish clay that holds water, and in planting a tree in a deep hole where the under-soil is of this character you simply give them a foot bath that may last the year around. Many orchards, not only of pear, but all other fruit trees, have been ruined by being planted in this manner.

I have been asked many times (especially by visitors to my place, when they see thousands of pear trees, some seasons limbs breaking down with the weight of the fruit), what do you do with all this fruit? Of course I sell all that we don't eat, give away, rots, or is stolen (the last not a small proportion, I am sorry to say). How can you dispose of so much? I usually and truthfully answer that I have never had any difficulty to dispose of my fruit, no matter how much I may have. It may not interest you, nor add to the value of my remarks, to answer this question, and yet it may be just what some of you would like to know.

It is not enough to grow good fruit. If you want to make money out of it, it is as essential to know how to gather, handle, sort, and pack, as it is to grow it. For the best result, a pear should be gathered before it is in eating condition. When a pear separates readily from the tree without breaking the stem, which time can be ascertained when they begin to fall, then is the time to gather them. Take them from the tree without bruising, pour them carefully on a pile, then assort them into two or three grades (it is my practice to make two grades), pack carefully in clean boxes, kegs, or barrels. If to be shipped away, press them in the packages so they will not settle, and consequently bruise and rot. Many invoices of pears and other fruit have been sold for less than the freight and commission charges, principally because they were not properly put up. Dealers want you to face the packages with nice fruit, but they don't want all under the facing to be worthless and indifferent, but merchantable fruit all through. Whoever will face a package of pears, or any other fruit, and fill up the package with worthless fruit—a very common practice, I am sorry to say—is not an honest man, but a disgrace to the profession to which he belongs. That man *ought no* and *does not* make fruit-growing pay. The second grade of pears I usually sell to hucksters at a low price, or give or throw them away, as was done with bushels the past season. I can always sell good pears, put up in a good shape, at paying prices.

At the close of Mr. Ohmer's essay the question was asked whether any one present could give any more facts or observations on pear blight. No one responded in the affirmative; but several members stated that the disease seemed to have been less prevalent than usual the past season. [See article on the subject by the Secretary, in latter part of this report.]

REPORT OF THE COMMITTEE ON FRUITS.

Your committee find on the tables the following fruits, exhibited by the following persons:

J. L. Teal, of Perin Mills, Clermont county, 14 varieties of apples, very finely colored; 2 for name, but not worth naming; 1 variety of pears, the Columbia, one of the finest pears, and to be recommended.

Leo Weltz, of Wilmington, exhibits 8 varieties of seedling fruits.

W. Kramer, of Dayton, exhibits 16 varieties of apples, correctly named, and fine specimens.

A. Furnas, of Danville, Ind., exhibits 2 varieties of apples.

W. C. Pinkham, of Loveland, 10 varieties of apples, good specimens.

M. B. Bateham, 7 varieties of apples.

G. H. Miller, of Norwich, exhibits a new apple, the "Corps Choice," a promising variety.

N. Ohmer exhibited 9 varieties of apples of excellent kinds, and specimens; 4 varieties of pears, good; 1 plate of pear-quinces.

George M. High, 3 plates of Catawba grapes in good condition.

F. R. Palmer, of Mansfield, 7 varieties of apples; one marked No. 10, not recognized; "Grimes' Golden," very excellent.

S. A. Bushnell, of Oberlin, 3 varieties.

Jerome Tice, Clermont county, 21 varieties, good kinds and good fruit, among them the Clermont, which is one of the finest winter apples.

George W. Trowbridge, of Glendale, 10 varieties of apples, including the Ohio Pippin; 3 varieties of fine pears.

W. Ramsey, Dayton, 2 varieties of pears, one of them apparently a long keeper, and probably a good pear when ripe.

A fine collection of apples, sent by Mrs Frank Pentland, of Lockland, consisting of 12 superior varieties.

The committee are well pleased with the fine samples and correct labeling. We have had often a larger exhibition, but never better.

Respectfully submitted,

LEO WELTZ,
J. J. HARRISON,
A. FURNAS.

DISCUSSION ON VARIETIES OF APPLES.

Among the fruits exhibited were quite a number presented for names, as usual, and most of these were identified and named by the committee; but some were not known, and others not deemed worthy of name. Among those believed to be new, or worthy of special notice, are the following:

"*Corps Favorite*," *or Beverly*.—Specimens by G. H. Miller, from a large apple-grower named Corps, near Beverly, Washington county, who has been planting it largely for some years, and now has nearly one thousand trees of it in orchard, most of them of bearing age. It was introduced or produced from seed by a relative of the family in Morgan county. The tree is a good grower, very productive, and the fruit always fair and uniform; the most saleable and profitable of any variety grown in that region for the Southern markets. It is rather below medium size, hence too small for a popular cooking apple, but just right for dessert, and its deep red color and good quality admirably fit it for that use. It had not before been exhibited to the Society, and was not recognized as a known variety, hence presumed to be new. Specimens were afterwards forwarded to Chs. Downing, who also believed it to be a new variety, and deserving of culture, though too small to be popular in eastern markets. It was suggested that *Beverly* would be an appropriate name for it, if Mr. Corps consents; and Mr. Miller was advised to learn more about it, and to propagate the trees in his nursery, as it will be likely to become popular as a Southern market fruit.

"*No.* 10" was the name affixed to a plate of handsome large apples presented by F. R. Palmer, of Mansfield, for identification, and was new to the Society. It was reported as from Wyandot county. Fruit large, yellow, fair quality, good sub-acid flavor, texture a little coarse, suited for cooking and market. Tree a fine grower and bearer. Was deemed worth further observation.

A similar apple, but different, was presented as a seedling, from Mr. Harlan, of Wilmington. Another from Mr. Coulter, of same place, quite large, greenish color, apparently a good keeper, but quality not high enough. A smaller apple from same, not ripe, said to be valuable as a long keeper. Mr. Weltz presented several other good seedlings from his neighbors about Wilmington. He will take further note of them.

Onstine Greening, from S. A. Bushnell, of Oberlin, is not very new, but little known as yet. It is claimed as of special value for long keeping, and preserving its pleasant acid flavor until spring, which most late keeping apples fail to do. On this account it is desirable in a home assortment, although in other respects the fruit is only third-rate.

Another apple, *Higby Sweet*, from Mr. Bushnell, is a little better known, but not as widely as it deserves to be. It is a fall apple, hence the specimens were out of season, and not appreciated. For its beauty and excellence it deserves a place in every family orchard.

Clermont.—Specimens by Mr. Gatch. Several members spoke highly of it, as on former occasions, while others thought it did not quite come up to expectations in quality nor in uniformity of size and shape. It is a good winter fruit for Southern Ohio, but lacking in richness and sprightliness of flavor when fully ripe.

Liberty.—Specimens of this apple, as grown in Lake county, were presented by the Secretary, and admired for their high color, fine texture, and fair quality. It keeps sound and fresh till May.

There was not time at this meeting for any discussion on well-known varieties.

A SHORT LECTURE ON PEACH CULTURE.

Mr. J. C. Anderson, of Warren county, read a short paper on peach culture, much of which was a history of the failures of the peach crops and destruction of orchards in that section of the State, where in former years peach culture was among the leading pursuits; but no general crop had occurred since 1874. But for his part he had continued the cultivation of his extensisive orchards, in the confident hope and belief that a return of good crops would yet reward him for his labor.

Brief discussion followed on peach crops and the seasons, injury done to trees by the winters and by overbearing, etc., but setting forth nothing new.

NEW EARLY PEACHES OF OHIO.

Mr. Bateham spoke of the large number of very early peaches produced from seed within a few years past, mostly in Southern States, and several in England. Two or three of these had borne fruit this season for the first time in Northern Ohio. They seem to be some days earlier than our Hale's Early, and may prove valuable. But we have also three or four new seedling early peaches produced in Northern Ohio, and just coming into notice, which seem likely to be quite as early as any grown elsewhere, and may prove more valuable.

Honeywell is the oldest of these Ohio seedlings. It originated on the grounds of a family named Honeywell, in Portage county, about seven years ago, and the stock was bought up by a nursery firm in New Jersey, who represent the fruit as ripening two weeks earlier than Hale, or as early as Amsden or Alexander, while the size and quality are quite as good, if not better.

Davidson's No. 1 is the name given to a remarkably fine new peach produced by Mr. T. Davidson, of Painesville, which has fruited the past two seasons. It fruited this past season a full week earlier than Amsden, and two weeks earlier than Hale, all on the same lot of clayey ridge soil. The fruit is of full medium size, the quality as good as Hale and more highly colored, rendering it very saleable. Mr. Davidson has also another early seedling, which he calls No. 2, and thinks will be quite as early as Amsden, but it has only fruited one season. Both these are supposed to be seedlings of Hale, but the foliage of No. 1 is more like that of Serrate Early York.

Allen is another new seedling produced in Lake county, by A. T. Allen, of Willoughby. It has fruited two or three seasons, and always a full week or more ahead of Hale's. Specimens presented me last season were ten days ahead of my earliest Hales, and equal to them in size, color, and quality. I should rank it almost equal to Alexander in earliness and all other respects, with the advantage of being native to our soil and climate. Trees of this and the foregoing will be for sale by our nurserymen next fall, and if there is a peach crop the coming season, I intend to have full comparisons made as to their times of ripening, size, quality, etc.

ANOTHER LECTURE ON FORESTRY.

On the invitation of President Warder, Prof. E. W. E. Koch, of Toledo, gave a very able lecture on forestry. Prof. Koch is a practical horticulturist residing near Toledo, and has been very successful. He is also an academic, being a graduate of a German university. His accent is very strongly German, but he speaks correct English, and with great cogency. After speaking of the importance of foresting our country, he reviewed the policy of the European governments in reference to it, and gave their manner of conducting the department of forestry in the Prussian empire. He then reviewed the very little that had been done by our government to encourage arboriculture, and denounced the indifference with which the people of the United States looked upon the devastation of her great western forests by timber thieves. He advocated immediate action by Congress in the matter, and a system of strict laws for the prevention of further depredations, including a system of police, etc. He heartily indorsed Secretary Schurz's efforts in this direction.

In the discussion which followed, several gentlemen gave their views, and the sentiment of the whole meeting was an unqualified indorsement of Prof. Koch's lecture.

THE ALTERNATION OF APPLE CROPS.

Mr. Bateham said the greatest bar to any pecuniary profits from our apple orchards was the increasing tendency of the trees, as they advance in age, to bear excessive crops in some seasons and very light ones, or none at all, the alternate years. Hence we have in Ohio an aggregate crop in some seasons, like 1876, reported by the assessors at nearly thirty million bushels, and the present "even" year (1878), will show similar figures, while the odd years—1875, 1877—show only about one-eighth of that amount, and the coming year will again doubtless be one of almost general failure. In the plentiful seasons the apple crop is superabundant, so that no demand can be found for the fruit, or if portions of the crop are sold, it is at so low a price as barely to pay for the picking, packing, and marketing, leaving no net profit. Then in the scant years the majority of orchards yield so little fruit, and that so generally wormy, that no profit is again the result.

The cause of this evil is not difficult to understand, but the remedy or means of its prevention is not easy to discover or apply. When an orchard has come into full bearing, it is usual to omit the culture of the ground, and the trees are left to take care of themselves, with simply an occasional thinning of the branches, called pruning. A favorable season brings a full crop of fruit, and this with the summer drouth and diminished fertility of the soil, cause such exhaustion of the trees as prevents the possibility of their bearing much if any fruit the next season; but with a year of rest and recuperation, they are ready to bear a full crop again the alternate year—and so the unfortunate process goes on, until some casualty, like the destruction of the blossoms by frosts, interrupts it for a season or two.

In the seasons of excessive crops, the trees being overtaxed, of course the greater part of the fruit is deficient in size and flavor, which also contributes to its dull sale. At such times it is only the fruit from the younger class of orchards, which have not yet been injured by over-bearing or neglect of tillage, that is saleable in the markets. In some parts of our State, as the northwestern section, especially on the rich clayey soils of the Maumee district, the orchards are comparatively young and thrifty, and have been profitable to their owners on account of their bearing fair crops every year, the fruit selling at extra prices in the seasons of failure in other parts of the State. So also in most townships elsewhere there will be found one or more young orchards, or such as have been well cared for, that yield more or less fruit in the "off" years. Were it not for these exceptions to the general rule, the statistics of the orchard crops of the State would show even greater alternation than they have done.

So great is the magnitude of this evil that it is incumbent on this Society to make known the best means that can be devised to lessen or prevent it. Of course the first thing that suggests itself is to adopt some method of preventing over-production, such as thinning off the young fruit in the spring. This has been practiced successfully on a small scale, and is useful as a means of securing a family supply of fruit each year. Trees can be made to produce annual crops in this way if kept in growing condition. The difficulty in the way of adopting this method in orchard practice is the large amount of labor it involves. The next suggestion is to cultivate the soil of orchards, or to top-dress them with manure, ashes, bone-dust, lime, etc., so as to keep the trees in a growing condition, instead of letting them become stunted and prematurely old,. as is the common practice. And lastly, plant more new orchards and cut down the old ones that have become unprofitable, as soon as the young ones come into bearing.

Mr. Pinkham said there was some difference in varieties of apples in regard to excessive and alternate bearing. For instance, the Rambo is apt to overbear; but he had some trees of it that have borne fair crops, or full ones almost every year for twenty years, the soil being strong and the trees kept healthy by tillage.

Mr. Fetters said he had two orchards; one of them alternated with the other in their seasons of bearing for quite a number of years, till three years ago, when both had a full crop together, and have since alternated alike. Rambos with him alternate as much as any. He thinks we can select kinds known as moderate bearers that will not be so apt to fall into this habit. He has, in some seasons of full crops, knocked two-thirds of the fruit off, while young, from a few trees, with a pole, and found it caused a partial crop the next year; did not think the thrashing was any material injury to the trees. Rome Beauty and Kincaid are good varieties for annual bearing.

Mr. Weltz said nurserymen should learn what varieties are moderate and annual bearers, and recommend them to their customers in preference to the known excessive bearers.

Mr. Innis spoke of an orchard near Columbus in which were several rows of sweet apples planted for stock, and many of these were dying apparently from over-bearing—Jersey Sweet the worst.

Some discussion on storing and keeping winter apples, merits of the Cope fruit house, etc., did not elicit anything new.

RULES FOR JUDGING FRUITS.

The following rules for the guidance of committees in awarding prizes on fruits at fairs and horticultural exhibitions, were prepared and presented by President Warder, and, after some discussion and amendment, adopted by the Society, as follows:

Having had, during the past thirty years, frequent opportunity for seeing awards made upon the relative value and excellence of fruits shown at the numerous State, district, county, and local exhibitions, the need for some standard to guide the judges in the proper performance of their delicate and arduous duties has often been painfully apparent.

The managers and directors often require the judges to assign reasons for the awards they may render or withhold, which is a most excellent regulation, but one which is seldom complied with. Indeed, without some definite plan of action, and without some fixed rules, it is almost impossible to render such compliance. It is with a view to make this possible, and at the same time to facilitate and systematize the work, that this paper has been submitted for discussion and approved by the highest horticultural authority known to our State.

GENERAL RULES.

1st. In all cases the judges are to be governed by the letter and spirit of the schedule under which the exhibiters have made their entries. The general appearance of the fruit, care in its selection, and taste displayed in its arrangement or grouping, each entry being distinctly separated from the rest; these are all elements of the highest importance, and should receive appropriate consideration by the committee.

2d. In every group, whether the single plates, the threes, fives, tens, or larger collections of fruits, there should never be more than one plate of any variety in any one group. Lists of the names of varieties exhibited should accompany each group, and must be attached to the entry card, and have a corresponding number and designation, with or without exhibiter's name, according to the rule.

3d. The same *plates* of fruit can not compete for different prizes, except in the grand collection of largest display (sweepstakes); though the several entries for the best ten, best five, or other numbers, and the best plate, may embrace the same varieties, but not the same plates of specimens; in each case they must be duplicates, and in sweepstakes they will count for a single variety.

4th. When the schedule prescribes the number of each kind, usually 3 or 5, to be placed on exhibition, the exact number must be presented, neither more nor less.

5th. In general collections of fruit by individuals, counties, or otherwise, when the several species of fruits are specified in the schedule, they must all be presented, or the collections may be passed by the committee.

6th. In all cases, but more especially in the display, or greatest and best collections, *number* of varieties is the *prima facie* test of superiority, other things being equal; but quality, relative value, their perfect condition, and tasteful appearance, will be considered, and should rank thus respectively:

1. Number.
2. Quality or value.
3. Condition, approaching perfection.
4. Taste in the display.

To illustrate: on a scale of ten—

	RANK.
No. 1 may have 100 plates—the largest collection	10
Quality: some inferior varieties	5
Condition of fruits: rather poor	5
Taste in the display	5
Total	25
No 2 may have 90 plates—ranking	8
Quality: superior in most—ranking	8
Condition of fruit: perfect—ranking	10
Taste in the arrangement: good—ranking	9
Total	35

No. 2 would, in this case, take the premium.

In the case of single plates of the several kinds named, or in a competition for the best plate or basket of any kind of fruit, we may consider condition, form, size, color, and texture, with flavor.

On the same scale we may have two entries to decide, thus:

	No. 1.		No. 2.	
Condition	Perfect	10	Stem lost	8
Form	Abnormal	8	Perfect	10
Size	Overgrown	8	Uneven	6
Color	Perfect	10	Too pale	6
Texture and flavor	Superior	10	Insipid	5
Totals		46		35

This scaling might be used in deciding between any number of single plates of designated varieties, competing with one another, for the best plate of any kind, or for the basket premium, with assortment or single variety according to the words of the schedule.

SPECIAL RULES.

The judges should have an ideal standard of perfection, in all cases, made up of the following particulars:

1st. The *condition* and general appearance of the fruit, which should be in its natural state, not rubbed nor polished, nor specked, bruised, wormy, nor eroded; with all its parts, stem and calyx-segments, well preserved; not wilted nor shriveled; clean.

2d. The *size*, in Apples and Pears particularly, should be average, and neither overgrown nor small; the specimens should be even in size.

3d. The *form* should be regular or normal to the variety, and the lot even.

4th. The *color* and *markings*, or the *surface*, to be in character—not blotched nor scabby.

5th. When comparing different varieties, and even the same kind, grown on different soils, the *texture* and *flavor* are important elements in coming to a decision—5 points.

In the class Peaches, Plums, etc., the important elements are *size*, *form*, *color*, *flavor*, and *condition*—5 points.

In Grapes we must consider and compare the *form* and *size* of the *bunches*, the *size* of the *berries*, their *color*, *ripeness*, and *flavor* and *condition*—5 points.

In Currants we shall have to examine the *perfection* and *size* of the *bunches*; and of the *berries*, their flavor and condition—3 points.

In Gooseberries we shall look to the *size*, *color*, *flavor*, and *condition* of the fruit—4 points.

In judging Cherries, we have as our guide the *size and form*, the *color*, *flavor*, and *condition*—4 points.

In judging Strawberries, we shall compare the *size and form*, *color*, *flavor*, *firmness*, and *condition*—5 points. They should be shown with stem and calyx.

Raspberries may be shown with or without the calyx. In this fruit we shall have to judge of the *size*, *color*, *flavor*, and *condition*—4 points. Blackcaps must have *size*, *color*, *flavor*, and *condition*—4 points.

Blackberries must be tested according as they present *size*, *color and form*, *flavor and texture*, and *condition*—4 points.

In all cases it is well to have a convenient scale of comparison, for which the number ten is found to be easily managed. The highest figure denotes perfection for the variety, and five is mediocre; below that is condemnatory. The total of the marks should exceed fifty per cent. of the possible number, or the entry must be passed as unworthy of award.

ON THE EMBELLISHMENT OF SCHOOL-HOUSE GROUNDS.

Leo Weltz, of Wilmington, read the following brief essay on the horticultural decoration of school and college grounds. (Readers will make allowance for the writer's lack of familiarity with our language):

School-houses and colleges are built for the purpose of educating the scholars in the various branches of knowledge. Much money is expended in their erection, and advantage is taken of all modern improvements in making the buildings convenient and of imposing appearance. We are all proud of these structures; but how often do we see buildings that have cost say $20,000 to $40,000, and quite good of themselves, with scarcely half a dozen shade trees on the grounds, and not even a good roadway leading to their entrance; no variety of trees or shrubs or flowers to attract the young mind to other branches of study than are embraced in their regular course, although botany and the principles of horticulture ought to be taught in all our schools.

It is a great mistake that a taste for horticulture is not systematically inculcated among our children and young people. A love of nature, a taste for trees, plants, and flowers, is a source of happiness to every enlightened mind, and a tribute which every tender heart pays to nature.

In laying out and planting school grounds, space should be allowed for separate play-grounds for boys and girls, as many of the sports of one sex are unsuitable for the other. Apparatus for gymnastic exercises may be furnished for the boys, and croquet, or the like, for the girls. But while providing for physical exercise, the mental should not be forgotten. An *arboretum*, if only on a small scale, would be highly useful and interesting, along with a plantarium or botanic garden, where the pupils could see and learn the names and characteristics of the various trees and plants, at least those indigenous to our own State, and afterwards this can be extended gradually so as to embrace those of other States and countries. The object-lessons thus taught would be fixed in the mind better than if learned from books, and the foundation laid for further acquirements in the same direction, and, above all, a love for the objects of nature, which is a great point gained.

Parents should see to this work, and foster at home, by their own example, a taste for trees, plants, and flowers; a love of nature's work, of gardening and floriculture; thus affording delightful employment for leisure hours which might otherwise be spent in places and amusements that are hurtful.

The roadway leading to the school-house should be wide and smooth, either paved or nicely graveled, so that none will be tempted to leave it, and walk on the grass. Then a well-graded and nicely sodded field, kept well mowed in summer, will be of itself quite an ornament. In choosing trees for the play-grounds, the most hardy sorts should be selected, the arboretum being separate. The elm is one of the most suitable trees; its graceful form and tall but pendant branches admirably fitting it for such places, and the tramping of the soil about its roots does not much affect it. The swamp or soft maple is also a good tree for school yards and play-grounds. It grows readily, and is not easily injured by treading, etc. The English horse chestnut is also desirable for variety, though the tree is of slower growth. It forms a beautiful round head, and the leaves appear earlier and hold on later than most others. The blossoms are also quite showy, and the nuts afford sport for children. The abele or silver poplar should also be included for the beauty of its silvery foliage in contrast with other trees. It does not cause trouble from sprouting where the ground is kept firm and the grass frequently mown. The sugar maple, with its rich dark foliage, contrast finely with the abele, and is of itself one of the best of our native trees. The rich coloring of its foliage in autumn is a special commendation, and gives it a very picturesque appearance. The Norway maple, where it can be had, is also desirable for its fine form and dense foliage. Then there is the catalpa, with its beautiful flowers and broad leaves; also, the scarlet oak and several species of ash, all desirable to make up variety where grounds are spacious.

And to enliven the dreary winter season, we must have some evergreen trees. Groups of these on the west and north sides of the grounds will also serve as wind breaks in the cold season. The Norway spruce is perhaps the best of all our evergreen trees for general planting. Then the balsam fir, with its pleasant odors, the Scotch and Austrian pines, and especially our native hemlock, are all desirable. They are plenty and cheap at most of the nurseries, and bear transplanting quite well. As a rule, it is best to begin with planting such trees as can be most easily and cheaply procured, of suitable kinds, adding others after a while. So in commencing an arboretum, none but the trees and shrubs of the vicinity or county need to be planted at the first, then beds of the native flowers and the plants used in medicine or the arts. These should all be distinctly labeled, and kept in good order. Rock work may also be added, if done with skill, including specimens of native ores, minerals, and shells.

Lessons in natural science, thus taught at the schools, can not fail to improve the minds and hearts of the pupils, and the effects will be manifested at their homes and throughout their lives. We see it now, in many families, in the general love of the children for flowers and ferns, and autumn leaves, curious stones, shells, etc., and the increased taste of young people for decorating their homes. This will inevitably lead to a desire for higher intellectual culture and general accomplishments.

In this light, also, we can see and appreciate the educational influence of our noble institution, the State Horticultural Society, affecting so many of our towns and cities. See, too, what fine examples have been set in places like Circleville, Lancaster, Wilmington, Athens, London, Ravenna, and others, where the school grounds have been embellished somewhat in the manner here suggested.

The kindergarten is designed for children of between three and six years of age. Its purpose is briefly set forth by its advocates thus:

> "To take the oversight of children before they are old enough for school life, and exert an influence over the whole being corresponding with its nature; to strengthen the bodily powers, to exercise the senses, to employ the awakening mind, to make the child thoughtfully acquainted with the world of nature and of man, to guide the heart and soul in the right direction.
>
> "Its aim is, also, partly to relieve parents of small means from the care of their children during part of the day, and during that time to train them properly; and, finally, it is to prepare the children for school, to fit them to learn more readily, and to sow the seeds that will produce men and women of sound minds in sound bodies. The teaching

is not from books, but with toys and other familiar objects, and a garden in which to exercise the natural taste for flowers, and learn not only to love but to cultivate plants."

Here, then, is the germ from which will spring the better education, with the love of plants and flowers, and the love of work. Let us plant more trees and flowers around our homes, and let every school yard be made a park for education as well as recreation and admiration.

SECOND EVENING SESSION.

ELECTION OF OFFICERS.

The committee appointed to nominate officers of the Society for the ensuing year, reported that they could not make up their minds to recommend any change in the present board, notwithstanding the recommendations of the worthy President. They had been informed that Mr. Pentland wished to be excused from service as member of the *ad interim* committee, hence they recommend the appointment of Geo. T. Trowbridge, of Hamilton county, in his place. The report was accepted and the committee discharged. President Warder then asked the meeting to disregard the report and make open nominations before voting, but no one was willing to do so, and on motion, the old officers were re-elected, only putting Mr. Trowbridge in place of Mr. Pentland—see names and address on p. 2, and at the head of list of members at the close of this report. President Warder tendered acknowledgments in behalf of all the board.

The following address, by C. W. Pinkham, of Loveland, afforded some merriment as well as good sober sentiments, especially as read by its author, with his old-style dry humor.

THE CIVILIZING INFLUENCES OF HORTICULTURE.

BY C. W. PINKHAM.

Mr. President, Ladies and Gentlemen:

When I received a note from our worthy President inviting me to furnish a paper for this occasion, with the privilege of selecting my own subject, I was much surprised, and attributed his note to his great ignorance. I did not question his superior knowledge upon pomology, floriculture, forestry, entomology, and many other subjects, but I did question his knowledge of any ability in me to prepare a paper that would interest this meeting. While considering what to do, his very flattering note aroused in me a sentiment, not uncommon in many others, viz., self-confidence, or self-conceit. I accordingly accepted his invitation, informing him I would select for my subject "The Civilizing Influences of Horticulture." I had long been partial to this theme, and thought I could write a pretty good article on it.

Occupied at the time in other matters, I deferred my task for a few days, and in the meantime hammered my brains for facts, and amplifications, and logic, and poetry, and sentiment, but when I sat down to write, alas! nearly all my few ideas had vanished, and I found my brain as sterile as Zahara, and, worse than all, my self-conceit suddenly departed, went "where the woodbine twineth."

I was in a dilemma, and concluded to give it up and send word that sickness had caused my failure, but the recollection that when a little boy I owned a little hatchet, deterred me from the falsehood. I then resolved to go it blind, and in the event that my article should prove a bore, to throw the responsibility upon our president; and should he ask your pardon for this mistake, I trust you will grant it, as I shall, for I think he makes an excellent president, and hope his shadow may continue to be seen, for lo! these many years to come.

In order to show some of the civilizing influences of horticulture, allow me the privilege, which is so frequently taken by others, of going back to that celebrated old Garden of Eden. (This beautiful old garden is a great thing, you know, for a theme.) Sacred history informs us that, when God created man He placed him in a garden which he prepared for him. I presume we all have similar ideas of what a garden is, or should be—a small piece of land, very fertile and highly cultivated, and generally devoted to the culture of vegetables, fruits, and flowers.

A detailed list of the varieties of trees, shrubs, plants, and flowers in this Garden of Eden is not given us; but such is the general statement narrated, as warrants the inference that fruit and flowers were prominent features of its use and beauty. Its vegetable productions appear to have been amply and entirely sufficient for man's sustenance so long as he was permitted to remain there. He was directed to dress and to keep the garden, and was told that its productions should serve him for food. We are no where told that it was to serve him with animal food.

Milton, the great poet commentator of that part of the Bible comprised in the first three chapters of Genesis, intensifies our imagination of the scene in Eden by describing it in his beautiful and sublime language.

He says—

"In this pleasant soil
His far more pleasant garden God ordained;
Out of the fertile ground he caused to grow
All trees of noblest kind, for sight, smell, taste;
And all amid them stood the tree of life
High, eminent, blooming ambrosial fruit
Of vegetable gold."

Again—

"Thus was this place
A happy rural seat of various view;
Groves where rich trees wept odorous gums and balm;
Others whose fruit burnished with golden rind
Hung amiable * * * * *
* * * And of delicious taste.
Betwixt them lawns, or level downs and flocks
Grazing the tender herb, were interposed;
Or palmy hillock, or the flowery lap
Of some irriguous valley spread her store,
Flowers of all hues, and without thorn the rose."

And again when the angel rehearses the details of creation to Adam—

"He brought thee into this delicious grove,
This garden planted with the trees of God,
Delectable both to behold and taste:
And freely all their pleasant fruit for food
Gave thee; all sorts are here that the earth yields
Variety without end."

We see from this that horticulture was the first industry of man, and that Adam and Eve were the first horticulturists; also that they formed the first horticultural society. It was a small one, 'tis true, consisting of only a president and vice-president, the latter a lady of a first family, but it was harmonious; no wrangling about the appropriation of the funds; no dissatisfaction at the awards of premiums; no delinquents in membership fees; no dispute about the nomenclature of fruits. They were *highly civilized*, and while engaged in this occupation they were in a state of perfect innocence and happiness. Had this employment been antagonistic to civilization they could not have been thus amiable and happy. But, alas! they fell. We are told that their fall was the consequence of eating fruit; but it was forbidden fruit. It is playfully said that this fruit was the apple. This I positively deny, and call for proof. No man or woman before or since the fall, who possessed the health and vigor of Adam and Eve in Eden, ever committed the least sin in eating, when fully ripe, a Golden Russet apple, a Seckel pear, an old Mixon peach, a Delaware or Concord grape, a Forest Rose or Charles Downing strawberry, a Gregg raspberry, or a Kittatinny blackberry, unless they stole them. I claim an equal right with others to my own opinion about the matter, and if I should offer my conjecture as to what our first parents eat that caused their downfall, if eating did it, it was eating a piece of *salt pork*, prepared by Satan in the most beautiful form and tempting flavor; for I think of all the animals that God created there is not one into which He has permitted so much of Satan to enter as the hog.

After man was driven from Eden and his descendants scattered over the earth, they evidently became flesh-eating, ignored horticulture, and hence became savage or barbarous. They became so wicked that God drowned all but eight persons, whom He preserved to replenish the earth with a better race.

After the flood, and as soon as the ground became dry enough to work, the head of this little family commenced the business of horticulture. He planted a vineyard. What varieties of the grape he planted is not stated. I do not think, however, that he cultivated the Catawba, the Concord, the Martha, or any of the Rogers' Hybrids. It may possibly have been the Scuppernong. I am sorry to be forced to admit that one of the results of this fruit culture was very disreputable to the head of the family.

The three branches of this family separated, and their descendants peopled again the earth. History confines itself closely to one branch only—that from which the Jews descended—and the whole history of that peculiar people is largely a narrative of their wars and contentions with surrounding nations and tribes. Their food being largely the flesh of their herds and flocks, very little attention appears to have been paid to horticulture.

From the time of Moses to the advent of Christ, the glimpses that sacred history gives us of the heathen nations show them to have been warlike and barbarous—a condition of man always antagonistic to the peaceful and æsthetic culture of trees, plants, and flowers; and I think we shall find that in proportion as man has given his practical attention to horticulture, in that proportion has his refinement and intelligence advanced.

As Greece and Rome progressed from their early barbaric state to that of their greatest civilization and refinement, their taste for horticulture and agriculture improved and kept pace with that progress; and many of their best educated men, and men in high public stations, were pleased and proud to engage in the still more humanizing occupation of tilling the farm or cultivating the garden.

So highly did they esteem agriculture, floriculture, and fruit culture, that their mythology gave to each a deity to preside over it; and to add a greater and more refined charm to these deities, they gave to each the female form, and named them Ceres, Flora, and Pomona.

Ceres was to preside over the grains, Flora to govern the flowers and ornamental plants, and Pomona to preside over fruits.

Ceres appears to be the substantial matron and housewife. She attends to the harvesting of the golden grain, and sees that the household is supplied with her well-made, nutritious, and properly baked loaves.

Flora is the beautiful maiden, whose occupation and delight is to ornament the premises and please the sight, displaying, wherever she goes, her innumerable varieties of flowers and buds and leaves of all colors, hues, tones, and tints, defying the most skillful artist to imitate them, and combining and arranging them in the most tasteful and pleasing order. She is the most merry and laughing deity of the trio.

Next comes Pomona, not quite so sedate as Ceres, and less laughing than Flora, but with a sweet and confident smile, conscious of her attractions and her worth. She is a strong rival of her sisters, for she combines the beauty and fragrance of the one with a more exquisite pleasure of taste of the other. She presents her cornucopia, and her beautiful and luscious fruits poured out in bountiful measure, inviting you to partake and enjoy, without sin and without remorse. He who courts and wins the smiles and favors of these goddesses, especially the latter two, can not but feel conscious of an elevation and refinement of sentiment which all the influences of Mars, and Mammon, and Bacchus are powerless to exert. Let us keep these female deities in view, and see what their influence has been and is in modern times.

Now, I think it is a truth which all will recognize, that association exerts a very great influence in forming and moulding human character. A perception of this truth has called forth these old maxims: "Tell me who are your associates, and I will tell you what you are"; "A man is known by the company he keeps"; "Birds of a feather flock together"; and so on. Let us observe, then, and ascertain in whose company these two beautiful maidens, presiding over fruits and flowers, may be found.

If we visit the lands and the homes of the Indian—the North American savage—the "noble red man of the forest" (Heaven save the nobility!)—our search will be in vain; we shall find Mars and Molock, but in such society Flora and Pomona have never been found.

Nor will they have been found to dwell with the early white adventurers and pioneers of this country, for though less savage than the aborigines, yet their contact with them, and their association with the wildness of the rocks, and forests, and beasts, rendered them rude and warlike.

Neither need we look for them about many of the log-cabins of the "backwoods" or the frontiers, for the gun hung on wooden pins over the six-foot fire-place, the fishing-pole set up against the "cat and clay" chimney outside, the half dozen lean and hungry dogs, and the "corn-dodger" and rusty bacon are not the society they choose.

Occasionally a foot-print or two of Flora may be seen in a straggling, old-fashioned rose-bush, or a stalk or two of hollyhock, as if she had left her card inviting the inmates to a more extended acquaintance with her.

They also are not inclined to be congenial visitors at the dwellings of those who worship at the shrine of Mammon, especially those who offer the hog in sacrifice. In fine, the savage and barbarous, the rude and uncultivated, the ignorant and superstitious, and the sordid and selfish are not the company they generally select.

To find them, you must go where their society is appreciated and courted; where their divine influences are felt, and which incite to investigation of the laws of nature and of nature's God; where their smiles give sunshine to the heart; where their rewards incite to industry with pleasing alacrity; where health to the body, pleasure to the sense, and elevation to the soul are the blessings they bestow upon their friends and votaries.

Whatever tends to enlarge and intensify our views and conceptions of the Deity, advances our civilization. What I understand by the word "civilization," is the reclamation of man from a savage, barbarous, ignorant, and warlike condition, to one of enlightenment, refinement, peacefulness, justice, and benevolence.

Now the culture of fruits and flowers enlightens, because it necessarily leads to investigation and knowledge of the laws and operations of Nature in the germination, development, growth, and fruition of trees and plants, and instructs into how many thousand varied paths she allows the skill of man to direct her, yet never permitting him to cause her to violate a single fundamental law to which she is confined. It involves the study, more or less, of the science of botany—a science so comprehensive, that the study of a lifetime will scarcely master it. It refines. Who can witness the display that Nature makes—either in her untrained wildness, or under man's intelligent guidance—of fruits, and flowers, and plants, and not feel a purity and elevation of soul inexpressible in words? Were anger, malice, profanity, or vulgarity ever known to be excited by a fine floral or pomological display? No, for woman is there to add to the loveliness and harmony of the scene, and her presence is an efficient sentinel against the intrusion of all that is low and discordant. A goddess presides.

It is peaceful. He that bestows intelligent and zealous labor upon horticulture, is generally at peace with God and man. The only warfare he wages is against noxious weeds. So long as he offers no violence to Nature, but complies with her known laws, she always meets him more than half way, with smiles and blessings. She never opposes him, as an enemy, with sword, and spear, and faggot, and the din of discordant antagonism, but she accompanies him as a friend, and it sometimes abused through his ignorance or carelessness, she forgives him "seventy times seven," and never forsakes him.

Horticulture teaches benevolence. Benevolence is, concisely, a disposition to do good to others. The horticul urist is conscious of the legitimacy and usefulness of his employment. He feels no sting of conscience—no compunctions—that the products of his industry are injurious to mankind. His business involves no doubtful morality; he knows that he is furnishing nutrition for and health to the body, affording pleasure to the taste and delight to the eye; that he is cultivating, in himself and others, a taste and a love for the beautiful in nature; that he is aiding in refining and elevating the soul to a higher and more just and exquisite appreciation of the works of the Creator. In proportion as he feels that he is doing good to others, in that proportion are his feelings of benevolence cultivated, for it is a truism, I believe, that doing benefits to others generates love for them, while doing them evil engenders hatred.

It is a principle of light (one which pomologists and florists well understand in making their exhibitions), that when two objects of opposite or contrasting colors are placed side by side, the colors of both are intensified to the sight by the association. Thus when blue and orange are closely associated, they both appear more intense in color than when viewed separated; so of black with white, yellow with violet-red, etc. Intimately connected with this principle is the idea of comparison. The size, form, weight, density, and all properties belonging to matter, are measured or estimated by a comparison with some others of known and established standard. This principle of contrast, and of comparison, also holds good in the moral, intellectual, and social world.

Let us apply these principles by placing a highly cultivated and beautiful flower-garden by the side of a filthy conditioned hog-pen; the contrast is conspicuous, and comparison naturally follows; but which will be most admired and enjoyed by the refined and civilized mind? Place the fruit-garden or orchard, whose trees are bending under the luscious and variegated gifts of Pomona, by the side of the brawling groggery or cock-pit. Would it require any very great sagacity to estimate the characters of the respective visitors to each place?

Two paths start from the same point, but diverging, one leads to the temples of Flora and Pomona, the other to the prize ring, the gambling hell, or the race course, is it difficult to discover the contrast in the characters of the travelers in each path? Who are they that are seen to visit, and take most agreeable interest in, the floral halls of our State and county fairs? And who are they that take most interest in visiting the hog-pens and the trotting course?

I have no disrespect for the hog raisers, but if any are here to day, I ask of them the liberty to say that I take pleasure in the holy disgust which I feel for the hog. Our Savior sent an evil spirit into him more than eighteen hundred years ago, and I can not discover that it has ever left him for a moment since.

These contrasts, favorable to horticulture, I might multiply, but enough, I trust, have been stated to suggest many others which you can call to mind for yourselves.

A little observation and reflection on the part of horticulturists upon the refining influence which their calling exerts, both upon themselves and others, should encourage them to continue their labors with added zeal, and to feel assured that their efforts will elicit the smiles of Heaven, and be rewarded with success. Nature is annually discovering to us new and improved varieties of fruits and flowers, in answer to our investigations and researches, and He who, by His skill and labor, calls forth these added gifts of nature, may justly claim to be a public benefactor.

I would rather be the originator of a superior variety of any of the standard and popular fruits, than to have been the victor of the greatest battle that history records. Then pursue this æsthetic, benevolent, and civilizing industry, for you may rely upon it that its "ways are ways of pleasantness, and all its paths are peace."

The following essay was beautifully read by Miss Carrie Brown, of Dayton, a valued member of the Montgomery Society:

OUR NATIVE CLIMBING PLANTS.

BY MISS CARRIE BROWN.

It is not my purpose to present a paper that shall be exhaustive of this subject, nor do I expect to offer much that will be new to those who have paid any attention to the beauties that nature has given us in the form of vines; but will only mention a few, that for one reason or another have attracted my own notice. And it is to the vines of our own Miami Valley I shall confine myself particularly, only referring to those of other localities by way of showing what can be done with them here.

Chief among the climbers of our forests is the Vitaceæ family. Of these, the Vitis proper, or grapes, furnished for centuries their fruits in their original forms to the aborigines of our land, and through the course of improved cultivation give to this age the Isabella, Concord, Catawba, and other varieties of fine grapes. The fruit of some of the species is in its primitive state very pleasant to the taste, that of the labrusca and æstivalis especially. But persons who were not in childhood accustomed to the simple pleasures of a country life, and know nothing of the native delicacies that the woods afford, will smile at this assertion. And I may here say that such persons will smile, and wonder too, at many an expression of admiration for "wild things" that will fall from the lips of one in whom the love for such things is inherent. Most of the grapes are noted for the delightful perfume exhaled from their blossoms, and all of them add beauty to our forests, particularly when growing luxuriantly, as they often do, over the tops of dogwood, red bud, or haw trees, forming lovely leafy arbors, and such as would be ornamental to large lawns or suburban grounds.

I fear the time is fast approaching when the grapevine in its natural state will disappear from our land, for our forests are rapidly vanishing before the ever-increasing population of the country; and few farmers think of preserving their fine forest trees, much less the vines, which seem to them of little value. But who that has known in their youth some rustic swinging seat, formed by a stout grapevine festooning itself from a low branch of a forest tree on a hillside, and hanging so near the ground that one could place himself comfortably upon it, and has there spent hours in summer-time with a favorite book, and in the autumn watched for the ripening of the grapes; who that has such delightful recollections can without a pang see all those reminders of past joys disappear? I wish all land-holders had such recollections, then perhaps we would have more wild grapevines preserved.

Belonging to the same order as the grape, and more beautiful than it, although without its fragrant flower and edible fruit, is the *Ampelopsis quinquefolia*, or American ivy.

This is abundant in our woods, and can not be easily exterminated, as it multiplies readily by its seed as well as by the trailing branches rooting themselves. It climbs high and rapidly by means of rootlets on the stem, or by tendrils bearing a sucker-like disk on their tips. But every one is familiar with the peculiarities of this vine, which not only adds great beauty to our woods, but has been universally utilized in cultivation all over our land. It recommends itself for so many places and purposes, by its rapid growth, its dense foliage, and its clinging habit. Nothing seems to serve so well as this vine to cover quickly a dingy blank wall of a shabby brick house, fastening itself as it climbs.

Nothing gives shade to a sunny porch so soon or gracefully as the Ampelopsis. It beautifies unsightly sheds and fences, screens curtainless windows, grows where nothing else will grow, and graces alike the stately church of stone, or the humblest cottage home. It gives exquisite pleasure to the eye in autumn with the gorgeous coloring of the foliage. A fit subject for an artist's brush is a grand old oak with its glossy green leaves, perhaps a little tinged with russet, and the Ampelopsis in its scarlet loveliness covering the trunk and branches, and showing among the oak leaves in beautiful contrast. And when the leaves are all gone, and winter has come, this vine has not yet done its whole work, for the fruit, which hangs in clusters of black berries, and in great profusion, remains on until late winter or early spring, and when the robins, blue-birds, and other early songsters come, these berries furnish them many a good meal. So this vine does duty in many a way, both practically and æsthetically, and is a public benefactor.

But the Ampelopsis must not be confounded, as it sometimes is, with the *Rhus toxicodendron*, or poison ivy. The leaves of the former have five leaflets, while those of the latter have but three, and the difference should be understood by every one, as the three-leaved ivy is poisonous to the touch, and should be avoided.

The Bignonia family gives us a noble climber in the *Tecoma radicans*, or trumpet flower. This climbs high by rootlets, and is very showy in our woods and waysides.

How many an old tree trunk with scraggy, bare branches, or ugly rail fence, has been made picturesque by this creeper covering them with dark green pinnate foliage, making them gay in July and August with clusters of large, trumpet-shaped, orange and scarlet flowers. It is not so great a favorite for cultivation as the Ampelopsis, perhaps because it is a much heavier vine, so not as graceful; and its weight too often prevents it from clinging as firmly as the other. Yet when it does once obtain a hold upon a wall it is hard to dislodge it, especially if by chance it finds a crevice about a window frame or beneath a roof into which it can send the smallest twig, for this soon grows so strong that casements and roofs have been displaced by its insinuating force.

Equal to either of the vines already named as to rapidity of growth—indeed, exceeding them—is the *Ipomœa pandurata*, wild potato vine, or man-of-the-earth, as it is sometimes called. This is not a woody vine, as are the others; the root is perennial, but the stalk dies down each year, yet often makes a growth in one season of thirty or forty feet, with a stalk an inch thick. It is not strictly a climber, that is, has no tendrils or rootlets by which it clings, but its stem twines round and round tree and branch, or in cultivation, about strong wires or cords, and so attains great height. The foliage is luxuriant, and the large white and purple flower resembles our cultivated Morning Glory, although it is much larger. The root is an immense tuber, weighing ten or twenty pounds, sometimes nearly as large around as a man's body; hence its name. It seems to be tenacious of life, as there is in our city one of these vines that is known to have come up from the same spot each year since the time when that part of the city where it grows was first cleared of its native forest. There, forty or more years ago, it is said to have ran rampant over the thick undergrowth, and now it graces the wall of one of our city homes.

It so happened that the land where grew this vine was owned by a gentleman, the late Judge Holt, who appreciated this vigorous twiner. He admired it in its wild-wood home, and when the growing city demanded more room, and his thicket must give place to building-lots, he guarded this man-of-the-earth as the ground was cleared about it, and as the summers came around he was often seen watching his favorite vine, and furnishing it some climbing place, until in the course of time he saw it, as we see it now each year, covering the side of a neighbor's house, trained up on stout cords or wires. This Ipomœa is rare in our forests, and the plants of it that are found there should be prized accordingly.

The Smilax family furnishes us with several climbers of pleasing appearance in their native homes; but as most of them are armed with prickles, our associations with them are not as agreeable as with other vines. The stems of many of them climb high, but as they branch sparingly, they make but little show. The foliage of most of them is attractive, as the leaves are large and glossy, some inclined to be evergreen. The flower is insignificant; the berries of two species are red, the others are black.

The *Dioscorea villosa*, or wild yam-root, resembles the Smilax family in foliage and flower.

The *Celastrus scandens*, or staff-tree, falsely called bitter-sweet, may not attract our attention during the summer; but in the autumn we are glad to see it with its long peduncles, bearing large clusters of scarlet berries, each one surrounded by a half-opened three-valved orange pod. The clusters are very ornamental, and as they keep a long time, furnish a pleasing bit of color for the house, when arranged with something green.

Of our native climbers that are valued for their blossoms, the *Clematis Virginiana* is perhaps the handsomest. It gives us in July and August large panicles of small white flowers, that are very showy as well as beautiful, and later the feathery-tailed fruit makes the vine conspicuous. I think we have no other species of Clematis in this locality excepting the viorna, which is interesting on account of the oddity of its bell-shaped calyx of leathery purple sepals. This genera of vines attach themselves by twisting their leaf stalk or clasping by it, instead of by rootlets or tendrils.

The *Solanum dulcamara* is the true bitter-sweet, taking its name from the fact that the root is to the taste first bitter, then sweet. It is not indigenous to this section, but is now often found in our woods, having been carried here by some means from other localities, and become naturalized. It is very ornamental, and well worth cultivating. The white and purple flowers it bears are much like those of the Irish potato, which is of the same family. The chief beauty of the vine is the berries, which grow in drooping clusters, and abundantly. While the flowers are yet blooming, some of the berries have formed and ripened, so we see the bloom and berries, both green and red, at the same time; and cold winter finds the red ones still clinging to the vine.

The *Rosa setigera*, wild climbing rose, seems to have become established here, and the *Rosa rubiginosa*, or sweet brier, introduced from Europe, is at home in our woods and way-sides, where it has probably been planted by early settlers near dwellings since destroyed. The roses do not attain great height, but the delicate pink flowers, with their delightful odor, make them choice additions to our climbing plants.

We have an annual climber, the *Echinocystis lobata*, wild balsam apple, or wild cucumber vine, which grows rapidly, and climbs high by its three-forked tendrils. In the woods, running over bushes and over fences by the way-sides, this vine is very beautiful, with its long compound racemes, of small greenish-white sterile flowers, and smaller clusters of fertile flowers, bearing a fleshy fruit two inches long, covered with prickles. I have enjoyed looking at this vine as I have seen it in my neighbor's gardens (when they were not too near), when the delicate blossoms decorated arbor and doorway; but I would not plant it in my own garden, unless I had plenty of time at my disposal in which to weed out the hundreds of seedlings that come up each year, which, if allowed to grow, would choke out everything tender. So I think the wild cucumber should be left to beautify its forest home.

The vines I have named are all indigenous to this valley, or already naturalized from other localities, and are, I think, the most noted of our climbers and twiners.

There are numerous trailing vines, such as the Convolvulus, Calestegia, some of the Leguminosæ and Polygonaceæ families, and many others; but upon these I will not dwell, as it is to climbers I would confine my remarks.

We are not rich in vines as our Southern States are. Our road sides and the banks of our streams are not as picturesque as those of the South, with their tangled mass of vines climbing up the trees, festooning from branch to branch, and drooping their long arms to be swayed by every breeze. Yet many of the vines that give such beauty there are perfectly hardy in our climate, and grow luxuriantly when transplanted to our gardens, as they often are.

Among this class is the *Wistaria-frutescens*, growing wild in the Carolinas and southward, and thriving just as well here, sending its branches up forty and fifty feet high, making a grand display, with its immense racemes of light purple flowers dangling from among its foliage.

We have from Virginia, the *Vitis bipinnata*, or *Ampelopsis-bipinnata* of some botanists, which is quite at home in our gardens. The leaf twice pinnate, as the name indicates, is very handsome, with a bright red stem, and branchlets also red.

One of the Bignonia family that makes in the South a grand show, and is exceedingly attractive, is the *Bignonia-capreolata*, or cross-vine. We, perhaps, can never see it growing as luxuriantly here, nor blooming quite as profusely as it does in its native soil, yet that it will live and bloom here, has been proven by the late Mr. R. C. Anderson, who introduced the vine into our city. The flower is much like the *Tecoma radicans*—not so large, but more brilliant. In its own home it grows large and strong, like the wild grape, the stem often five or six inches in diameter, and its branches literally covering large trees, making them gorgeous in spring time with their crimson and gold blossoms.

The *Aristolochia sipho* and *tomentosa*, or pipe vines, grow in cultivation here just as vigorously as in the South. The vines make a dense shade, as the leaves are large, especially the *sipho*, and closely placed, and are of very rapid growth. The flowers are green and brown, exceedingly odd, resembling a miniature smoking-pipe.

The delicate *Adlumia chirrhosa*, climbing fumitory, or Alleghany vine, that we all prize so much in our gardens, is a native of Pennsylvania and Virginia, but, I think, flourishes as well here as in its own home. It is a biennial, does not climb the first year from the seed, but the second year climbs high by means of delicate leaf stalks, and seeds itself.

Besides these, there are several species of honeysuckles, some of the Clematis family, and many other beautiful vines not indigenous here; but they are all perfectly hardy, live and bloom without any care, and would soon establish themselves in our forests if once transplanted there. What a rich addition to our climbing flora if we could include such plants as these!

The idea of thus increasing our flora will doubtless seem chimerical to every one hearing the suggestion. But why not have some organized plan for accomplishing such a purpose as well as for introducing fish and game from streams and forests of one locality to those of another, where it is known they will thrive? But you say, "They are for food, and there is reason in that." Very true; but mankind needs something else beside food for the body, to make perfect men and women; they want contact with nature, and any thing done to stimulate such a desire will strengthen physically, mentally, and morally, and so be of practical value.

I can see various ways by which an undertaking for the purpose of adding to the attractions of our forests would make many persons happier and better. However, I admit there is little hope that such a project will ever be carried out, for this reason if for no other, namely, that some persons would be sure to covet the new plants, and selfishly carry them off to their own gardens. For we are fast losing our own native flora, at least the choicest part of it, on account of the reckless vandalism of flower-gatherers, who often dig up every root of every rare plant they can find.

What can be done to preserve our native vines and other plants, to say nothing of increasing our flora? Massachusetts has set an example worthy of imitation (to which I have alluded in a former paper). She has a law prohibiting the removal from the woods of the roots of the *Lygodium palmatum*, or climbing fern, which was gathered in such quantities as to threaten its extermination. It is true this only protects one plant, but it is a move in the right direction. And at a meeting of a botanical society in Boston, a plant of the *Orchis spectabilis* was displayed which had been taken from the forest in a large sod of earth; and, when the meeting adjourned, the sod with the Orchis was carried back to the forest and replanted.

Until the public generally learn to show such thoughtfulness and consideration as this, we can not hope to preserve our loveliest wild flowers, nor entertain a thought of increasing our flora.

President Warder occupied half an hour giving an interesting narrative of his excursion to Kansas and the Rocky Mountains, the past summer. He spoke of the scenery and general character of the country, especially dilating on the beauty of the forests of some portions, and the great need of efforts to promote the planting and preservation of forests where none now exist. In some of the finest mountain districts, he said the forests were being sadly devastated by fires. He passed over a region many miles in extent, which had until recently been covered with stately forests, but is now all blasted and blackened by fire. He strongly commended the efforts of Secretary Schurz to protect the forests on government lands from robbery and spoilation, and hoped that more stringent laws would be enacted and enforced for that purpose.

FRIDAY MORNING.

The Committee on Flowers made a report highly commending the display of plants and flowers, by which the stand was nicely decorated, from Wm. Kramer's establishment, of Dayton. The assortment embraced a handsome specimen of Poinsette pulcherima, also Daphne odorata, Ardissia crenulata, Abutilons, Bouvardias, Carnations, Begonias, and a number of handsome Geraniums in bloom. The Committee also highly commended the interesting exhibition of branches of evergreen trees, from the nursery of G. H. Miller, of Muskingum county, embracing sixty species or varieties.

CODLING MOTH TRAPS.

Attention was called to the specimens of "Ruhlmann's Patent Codling Moth Bands," exhibited by an agent for D. M. Dewey, of Rochester, New York. It consists of cotton cloth woven with water-proof paper, and cut into strips for tacking around apple trees. All present thought it was doubtless a good thing, but probably not enough better than coarse paper to offset the difference in cost, and the fact that it was patented was spoken of as an objection. It was further remarked that very few orchardists were willing to use the band method of trapping the moths, owing to the amount of labor, and its not being sufficiently effectual. Hogs or sheep do the work cheaper and better.

A report of the Treasurer was read by Mr. Campbell, showing a satisfactory condition of the finances of the Society, and a very moderate amount of expenditures considering the amount of work done, and the large number of meetings attended by several of the officers. See the detailed statement, at the close of this report.

Mr. John Bradford, of Montgomery county, exhibited some fine Early Rose and Peerless potatoes, raised without cultivation. He stated that the seed potatoes were merely laid on top of sod under eighteen inches of straw, and never cultivated at all. They produced wonderfully. From some hills he took as many as thirty merchantable potatoes.

REPORTS OF LOCAL SOCIETIES.

COMPILED AND CONDENSED BY THE SECRETARY.

Muskingum County.—This Society has been active and useful the past year. The meetings are held monthly, from July to April, in the court-house, and the rest of the year at the residences of members. The sessions are of the social kind, and afford much pleasure, as well as instruction, to all who attend. Exhibition tables are well filled with fruits in their season, and the dinner table is always bountifully supplied from the baskets of the ladies. The Society owns its dishes, knives, etc., which are carried to the places of meeting as wanted. An essay on some timely and appropriate topic is read by appointment, at each meeting, and usually followed by discussion. The topics for the past year have been: "Management of Old Orchards;" "Home Adornments;" "Rotation of Fruit Crops;" "How to Utilize Surplus Fruits;" "Thorough Cultivation;" "Culture of Small Fruits;" "Ornamental Planting;" "Agricultural Chemistry;" "Forestry and Rain-fall;" "Birds and Fruits;" "Successes and Failures;" "Talks on Botany," by a lady. We have also had talks or discussions on entomology and various other subjects. The Society is growing in usefulness, and in favor with the people. Its monthly reports, published in the county papers, are read with interest. The Society has been favored at its meetings by visits from officers and members of sister county societies, and of the Committee of the State Society. Our fruit crops have been generally abundant this year, with a large surplus of apples. Geo. C. Townshend is president, and H. S. Nye secretary, Zanesville.

Montgomery County.—Mr. Ohmer read an interesting report from this Society, showing that it is still prospering and doing good work. Its monthly meetings are never failures, and most of them are grandly successful. The beneficial influence of the Society, during the ten or twelve years of its existence, has been widely felt, and is generally acknowledged. Not the least of its benefits, is the effect it has produced on the members themselves, in a social and educational way. Mr. O. did not state, as he might, that besides devoting much time and labor to the management of the Society, he had also found time to accept quite a number of invitations to attend meetings of other local societies, and to encourage them with sound words of instruction or advice.

Warren County.—President J. P. Mardis gave a verbal report for his Society; that it was alive and active—doing good work most of the year, and promising still better in the years to come.

Richland County.—Mr. Palmer spoke quite hopefully of his Society. They had several very good meetings during the year; but have not got rightly hold of the plan of social meetings at the houses of the members, or interesting the ladies in the work of the Society, as Mr. Ohmer is teaching all local societies to do; see his ad interim report.

Lucas County.—This Society is well organized, on the Montgomery plan, and is doing good work, especially in the rural townships. The county is generally well adapted for fruit, and orchard culture is a profitable branch of the farming. Peaches, pears, and grapes are also largely grown, as are the various small fruits; and the crops of nearly all were better the past season than the average. Apples in that quarter of the State were not as super-abundant as in most other sections, as the orchards are not as old or as much given to alternating their crops, and hence are the more profitable. F. Granger, of West Toledo, is President of the Society, and W. W. Farnosworth, of Waterville, Secretary.

Eastern Ohio Society.—This has its center at Barnesville, and embraces parts of several counties. No one was present to represent the Society at this meeting, but Mr. Miller had attended one of their local meetings the past summer, and gave a good report of it; he believed the Society was doing much good in that section of the State, and would not be permitted to go down, although quite a loss had been sustained by the Society in the removal from the State of its late president, W. R. Tipton, who has also long been an active member of our State Society. He goes to Little Rock, Arkansas, and will probably make that State his future home.

Columbus Society.—As mentioned in our last year's report, and in Mr. Ohmer's ad interim, the old Columbus Horticultural Society was revived last spring, and several good meetings and exhibitions were held during the summer and autumn. It is expected to move onward again the coming season, in a similar way.

Cincinnati Society.—It was reported that plans were in operation for reviving the Horticultural Society at Cincinnati. Since the meeting of our State Society this has been done, and commencing in May, regular weekly meetings have been held in the city, as in olden times, for the exhibition of fruits, flowers, etc., and for discussion on topics of interest. Reports of these meetings are published weekly in the *Grange Bulletin*, and contain much that is of general interest.

Portage and Stark Counties have each organized societies since our last meeting. Some notice of their doings in 1879 will be found a few pages onward.

Indiana State Society.—Dr. Allen Fumas, as delegate from Indiana, spoke of the continued activity and acknowledged usefulness of their State Society, and said their annual meeting would occur at Danville, the town of his own residence, the 17th to 19th of the present month (December), and the Society hoped they would be favored with the presence of one or more delegates from this Society, as they had usually been, at their annual meetings, and which courtesies they had endeavored to reciprocate.

On motion, Mr. Ohmer was requested to go, as delegate from Ohio, to the meeting of the Indiana Society. See his report thereof, a few pages onward.

President Warder was requested to attend, as delegate, the annual meeting of the Kentucky State Horticultural Society, to be held at Eminence, January 14th to 16th, 1879.

J. J. Harrison, as President of the American Nurserymen and Florists' Association, stated that the annual meeting of the Association was to be held in Cleveland in June next; and that it would be a meeting of interest to fruit-growers and horticulturists generally, as well as to nurserymen. He hoped there would be a good attendance of members of this Society, to welcome those who may come from other States.

Mention was also made of the coming biennnial meeting of the American Pomological Society, to be held at Rochester next September—an event of much interest to the fruit-growing fraternity; and Ohio should, of course, be well represented. Fortunately the time of the meeting will not conflict with that of our State Fair nor the Northern Ohio State Fair.

President Warder called attention to the course of lectures to be delivered the coming month, at the State University. Many of the lectures will relate to horticulture as well as agriculture, and a majority of our members are farmers as well as fruit-growers and horticulturists. He hoped that as many as can do so will attend a part or all of the course, and that the trustees and professors will be encouraged to make provision for a course of such lectures to be delivered annually.

DISCUSSION ON SMALL FRUITS.

INCREASED PRODUCT AND CONSUMPTION OF BERRIES.

On this topic there was some animated discussion, and facts were stated which were quite surprising to persons present who had not given attention to the subject. It was shown that the sale and consumption of strawberries in all our cities was annually increasing, and was believed to have fully doubled in the past ten years—some said in five years; showing that as fast as the supply is increased and the cost of production reduced, so that prices are low, the demand and consumption will be increased and the millions be benefited.

President Warder spoke of the immense consumption and shipments of strawberries at Cincinnati. He could not give reliable statistics, but the business had greatly increased within a few years past.

Mr. Bateham said he was told by the largest dealer in such fruits in Cleveland, that the consumption of strawberries in that city the past season, was at the rate of not less than 1,000 bushels per day, for over two weeks, and fully half that amount for ten days more. This is exclusive of the hundreds of bushels daily exported by cars and steamboats to other cities. At Columbus, facts were also given by dealers, showing nearly the same rate of consumption, and a rapid increase of the trade in both strawberries and raspberries.

At Dayton, also, Mr. Ohmer said, the same facts were observable, the sales for consumption and shipment during the height of the strawberry season often amounting to a thousand bushels or more per day. Complaint is often made by growers that the prices for which berries are sold do not afford a profit over the cost of production; but this is commonly erroneous. A man who has suitable soil and understands the business can afford to grow strawberries by the quantity for a less price than good fruit often brings in any of our markets; and low as the prices were the past season, he was convinced that his berries paid him a fair profit over all expenses.

Mr. Bateham said it should be one of the aims of this Society to furnish such information in regard to the varieties of fruits and the methods of their culture as would tend to lessen the cost of production, and swell the supply, so that the people of all our towns and cities might afford to use them freely, as they are beginning to do. The motto with our market berry-growers must hereafter be "fruits for the million"—at prices that the million can afford to pay. People are gradually learning that ripe fruits are to be regarded as a part of the necessary food of a family, and not merely be used as luxuries.

Mr. Palmer said few people who have not tried it have any idea how large a portion of the requisite food for a family may be derived from the fruit garden, if the garden is properly furnished and the family are educated as fruit-eaters. He had made some experiments and calculations in that line, and had found that the value of fruit, with reasonable daily use, was greater than the cost of flour or bread, excepting during the winter months; and he had known families to use more value of fruits than the cost of both meat and bread, more than half of the year—and this, too, with a saving in doctors' bills. Let all the people become well informed in this matter of fruit-eating, and we shall not often be troubled with glutted markets.

VARIETIES AND CULTURE OF STRAWBERRIES.

Information was called for respecting the conduct of Forest Rose in different localities; but answer was made that it had not yet been tested in a variety of places, as the plants were only sent out last year. Mr. Fetters, by request, gave a brief history of the variety, and some facts in regard to the amount or value of the crop produced on a portion of his ground.

Prof. E. B. Andrews, of Lancaster, said he visited Mr. Fetters' grounds several times during the strawberry season, and could corroborate what he had said about the beauty and excellence of his Forest Rose and the yield of the fruit. Of course Mr. F. was fond of his own child, and gave his plants good care and culture. The soil is a sandy loam, well enriched, location elevated; based on sandrock, similar to Snyder's vineyard. He did not want any larger berries—have to slice them with a knife.

Mr. Trowbridge spoke of the Cumberland Triumph as one of the largest and best of the newer varieties; succeeded finely on his ground; the fruit large and quality very good; perhaps a little too soft for distant carriage. Mr. Ohmer and several others gave their experience with new varieties; but their remarks are omitted here, as the results of another season's observations are given in a later portion of this report, and will prove more reliable.

Mr. Ohmer said many people make the mistake of attempting to grow more strawberries for market than they can give proper attention; and in some cases such fruits are grown by farmers, and the crop often needs attention just when farm work of some kind also needs to be done; hence the berry crop has to suffer. He has known men to make a good profit off one or two acres of strawberries, well cultivated and nicely marketed, when the same person attempting to manage five or six acres failed to get any profit therefrom.

DISCUSSION ON RASPBERRIES.

It was stated that the demand for raspberries in most of the markets had increased nearly as fast as that of strawberries, and the production had also increased in like ratio, with no material reduction of price; so that, other things being equal, it was thought the raspberry crop was the more profitable. People who form the habit of eating strawberries at table every day during June, will be sure to buy raspberries, if they can do so, to supply their place during July, or until blackberries, peaches, or grapes are ready to keep up the succession.

Of the new raspberries spoken of, but little was said of any of the Blackcap family excepting the Gregg; and all who had seen or tested it spoke highly in its favor. Mr. Miller and one or two others had fruited it on their own grounds, and many had seen its great success on Mr. Ohmer's premises; all confirming the belief that it is the best of all market varieties of its class. (See notes of 1879, a few pages onward, in this report.)

Of the red, or Antwerp class of berries, information was given of quite a number not as yet generally known. Mr. Ohmer spoke of the Thwack as of large size and producing well, the fruit of good color, and firm enough to bear transportation finely, but too deficient in quality to be popular even as a market berry. He said Dayton was not a good market for red raspberries, so he had not grown many of them. .Near Cincinnati they are growing the Turner with good success, on loamy soil, with the suckers kept well cleaned out, as needs to be done with all of this class.

Mr. Palmer had given a good deal of attention to red raspberries, and had found the Brandywine a good and hardy variety—quite productive when well treated, and the fruit of good color and quality, and bears shipping well, but is not quite large enough, especially in a dry season. He had tried the Thwack and a number of others, but as yet gave Brandywine the preference. Others who had grown the Brandywine spoke of it in much the same terms. It is more reliable than any other raspberry of as good quality.

Mr. Palmer said he had grown the Philadelphia with good success for home market. Had tried the Naomi (of Cleveland), and found the fruit of fine size and excellent quality, but the plants not quite hardy enough, and not reliable as to productiveness—seemed to fail to fertilize its blossoms some seasons, and did best with him when grown alongside of the Brandywine or a similar variety.

Mr. Trowbridge, of Hamilton county, and Mr. Furnas, of Indiana, found similar trouble with the Naomi. Mr. Bateham said it continued to be the most popular and profitable of all the red varieties around Cleveland. It wanted good loamy soil and fair culture. No difficulty was found there about fertilizing, even when no other sorts are within half a mile of it. The plants occasionally suffer by the winter, but not oftener than one year in seven or ten. Mr. Furnas had seen the Naomi quite fine on sandy land at Parry's, in New Jersey. In Indiana the Philadelphia is deemed the most profitable of the reds. (See Report of 1879.)

BLACKBERRIES AND "RUST."

Very little was said about blackberries, and but few members present were disposed to risk planting many of them, on account of the better sorts being liable to winter kill, and to suffer from the disease called "red rust." One or two had patches of the Snyder variety, and found it the hardiest of all, much like the average wild ones in size and quality; not quite large enough to sell readily, except at same prices as the wild. The Hoosac Thornless was spoken of as a good and reliable home berry. The Kitatinny still ranks as best for market.

CLOSING RESOLUTIONS.

At 1:30 P. M. the Society was about to adjourn for the excursion to the Soldiers' Home, and as but few of the members would desire to return to the hall, it was deemed best to close the proceedings there, leaving the executive committee to finish up any remaining business. On motion of G. W. Campbell, the following resolution was unanimously adopted:

Resolved, That the thanks of this Society are due to the members of the Montgomery County Horticultural Society for their cordial invitation and warm reception, and for the abundant facilities they have afforded to render our meetings both pleasant and profitable, and that we are especially indebted to Nicholas Ohmer, Colonel Brown, of the Soldiers' Home, and Mr. Robert W. Steele, for their efficient aid and polite attentions.

VISIT TO THE SOLDIERS' HOME.

This was a delightful finale to our three days' meeting, especially to those who had not before visited this very interesting and noble institution. All such persons are surprised at the magnitude of the establishment, the extent and beauty of the grounds, and the wonderful care and ability displayed in its management. The location of the Home is three miles from the city of Dayton, on beautifully elevated and undulating land, partly covered with stately forest trees, and watered with several living springs, thus having superior advantages for landscape improvement, in which line much good work has been accomplished and more is in progress, especially in adding a small lake to the other attractions. The extent of the grounds is nearly a mile square. About one-third of the land is devoted to farm and garden purposes, the rest to lawn, park, and pleasure grounds, and space for the various buildings, of which there are in all 132; of these 56 are supplied with water, 26 are heated by steam, and 50 are lighted with gas. There are on the grounds 6½ miles of macadamized road, 2 miles of graveled walks and 15 miles of sewers. For water supply there are 5 never failing springs, 10 wells, and 54 large rainwater cisterns, with 4 ponds covering acres of ground.

The Home was established by the Government about ten years ago, for the benefit of disabled soldiers. It is the largest institution of its kind in this or any other country. At the time of our visit, December 6th, there were actually present 3,380 inmates, besides 631 temporarily absent on visits to their friends, etc., making the entire number belonging to the Home 4,011.

On alighting from the cars at the main entrance to the grounds, our party was met by Governor Brown and several officers of his staff, who politely escorted us through the principal buildings, and explained to us a thousand things about their uses, and the various appliances for the support and comfort of the inmates. It was delightful to see how much provision is made for their intellectual as well as physical wants, for amusement and recreation as well as suitable labor for those who desire it. There are spacious reading rooms, well supplied with newspapers and magazines, and a library of nearly 10,000 volumes; also a chapel and a beautiful music hall, in which concerts, lectures, and theatrical performances are quite frequent and largely attended. There is a regular post-office, and a store doing a large business, the profits of which are used for the benefit of the lecture and music fund. A school is also maintained for the benefit of the younger class of inmate who desire to improve their education, and we observed quite a number of such availing themselves of its advantages; while many others were in workshops, learning various light mechanical trades, also working at shoemaking, tailoring, etc.

The cooking and eating departments are on an immense scale, and finely arranged. To give an idea of the amount of food required, the official report says it took 278 turkeys for the Thanksgiving dinner, and a single pot-pie requires 34 sheep, 15 barrels of potatoes, and 2 barrels of flour. During the year they consumed 758 head of cattle, 1,659 head of sheep, 3,714 barrels of flour, 15,747 dozen eggs, 154,932 pounds butter, 69,289 pounds coffee, 57,941 pounds fish, 7,950 pounds tea, 10,570 cans tomatoes (grown on the premises), 16,431 pounds rice, 110,440 pounds sugar, 21,257 pounds prunes, and numerous other articles, the whole cost of provisions amounting to $204,728.20. The average cost per day for provisioning each inmate is a small fraction over 20 cents, including the wages of cooks, butchers, bakers, etc. It would be considerably less but for the fact that about 300 inmates are fed at the hospital tables, which are supplied with as many luxuries as a good hotel. The regular diet at the general dining hall is quite good, and sufficiently varied: meat for breakfast and dinner, with tea or coffee, bread and butter, every day except Friday, on which day fish is used instead of meat, many of the inmates being Catholics. The day of our visit happened to be Friday, and the odor of fish and fried onions did not affect our party very favorably at first, on entering the kitchen and dining hall.

The vegetable garden affords occupation for a large number of inmates, and contributes a good deal towards their support; and the flower gardens and green-houses constitute a very attractive feature of the premises. This department is under the management of Mr. Charles Beck, formerly of Dayton, a well-educated and experienced professional gardener. The evidences of his taste and skill in the landscape improvement of the grounds show him to be a workman who needeth not to be ashamed. The conservatory is quite extensive, embracing nearly twenty thousand feet of glass, and is made to do good service in the propagation and growth of plants and flowers for sale, as well as for the decoration of the grounds. The sales of the past year from this source, mostly to visitors, amounted to $1,500. The products of the farm and vegetable garden are reported at over $8,000

Flowering of a Century Plant.—Among the rare and curious plants in the conservatory at the Home, is a century plant of the species known as *Agave forcroyia gigantia*, which blossomed the past summer, and the flower stalk was standing at the time of our visit. Along side of the stalk was a neat measuring pole, with marks of feet and inches, and showing the rate of growth of the stem as it reached its height of thirty feet nine inches, with its spreading head of white cup-shaped blossoms. It commenced at one foot ten inches August 13th, and grew at the rate of six to twelve inches a day for about two weeks, then five to nine inches a day for another two weeks, and gradually lessened the rate until October 10th, when it ceased at thirty feet nine inches. Of course it was an object of much interest to visitors as well as to the inmates.

At a meeting of the Montgomery County Horticultural Society, held recently at the Soldiers' Home, Mr. Leo Weltz, of Clinton county, was present, and made some remarks on landscape gardening, in which art he is an adept. He complimented highly the work of Mr. Beck, and said "it is not only in its appearance as a charmingly beautiful place that the Soldiers' Home is attractive, it is infinitely more. With its multiplicity of cleanly-kept walks and drives, its parks and mimic lakes, its smoothly-shaven sward and artistically planted flower-beds, with their wealth of coloring, it becomes a great moral and intellectual educator—a real civilizer and refiner of the ruder part of our human nature. In illustration of this, he says the young people of his county who come over here and visit the Home, go back filled with a love of flowers, and a desire to plant trees and shrubbery in imitation of what they saw here."

Our party left the Home, regretting that time would not permit any longer stay; and as soon as all had obeyed the loud and repeated whistle of the locomotive, and got on board the rail car for the city, a motion was made, and carried by acclamation, that the thanks of the officers and members of the State Horticultural Society be tendered to Governor Brown and his gentlemanly assistants of the Soldiers' Home, for their polite and kindly attentions on this occasion.

After returning to the hall, a meeting of the *ad interim* committee was held, and it was decided that one or more of the officers of the Society, or members of its committee, would endeavor to attend at least one meeting of each local horticultural society in the State, when invited to do so, during the coming summer.

REPORT OF INDIANA ANNUAL MEETING.

Mr. N. Ohmer, who was appointed delegate from Ohio to the annual meeting of the Indiana State Horticultural Society, held at Danville, December 17th, 18th, 19th, 1878, made the following report:

Mr. Secretary Bateham: Danville is a nice village of about two thousand inhabitants, is about twenty miles west of Indianapolis, and is the Hendricks county-seat. It was my privilege to visit this place early last spring, on the invitation of our friend Dr. Furnas, and other citizens, to assist them in the organization of a county horticultural society; and the effect of that organization was appreciable in more ways than one at this meeting of the State Society.

I arrived just in time to attend the evening session of the first day (Tuesday), and was surprised to find so many persons in attendance, and such a magnificent show of fruits upon the tables. There were about seven hundred plates, embracing a very fine lot of apples brought by ex-Gov. Furnas from Nebraska. Very few of these specimens could be recognized or identified by persons present, on account of their unusual size and beauty. There were also handsome oranges and lemons from California, etc. This fine show and large attendance I learned was brought about mainly through the efforts of Dr. Allen Furnas, who resides near this place, and who determined that this meeting should be a success in every particular as it was. Something was also due, I think, to the fact that the Society offered premiums for the best assortment and display of fruits—an exam le which our State Society might perhaps follow with advantage.

The business of the first afternoon was a welcoming address by Dr. Furnas; then the annual address by the President. The latter consisted mainly of a review of the year, and suggestions as to what, in his judgment, was for the good of the Society. These were referred to a committee for future action. Then followed a re-election of the old officers of the Society.

In the evening an able essay was read by ex-Governor R. W. Furnas, of Nebraska, on the progress of fruit culture in this country. The value and importance of the fruit crops were ably set forth, with carefully gathered statistics, showing that the estimated value of the fruit crop in 1877 was not less than $143,000,000 (and that of 1878 was doubtless still greater). This paper was followed by discussion. Next was an essay on strawberries and their culture, by N. Ohmer, of Dayton, Ohio, in which he narrated his experience in growing this fruit for the past twenty years; how it is best done by the acre, for the market, and in the garden for home use. This was followed by a paper on the same topic, by G. Cowing, of Muncie, Indiana, and then general discussion on the subject of strawberries, until this fruit was well talked up.

Next morning there was a short talk on raspberries and blackberries, participated in by Ragan, O'Haver, Burnet, and Ohmer. Then an address by Prof. Cox, Indiana State Geologist, on the agricultural, horticultural, and mineral resources of the Western States, with an interesting description of the San Juaquin and Sacremento Valleys of Calafornia, and other places visited by him in that region of our country. In closing, he said, "While I consider this the finest fruit growing country in the world, the mineral resources are also unsurpassed, and on every hand are evidences of the most energetic people on the face of the globe, who, by their force of character and circumstances, rank second to none."

Then followed a report by Mrs. Helen V. Austin, of Richmond, Indiana, as delegate to the recent annual meeting of the Illinois State Horticultural Society, at Sprinfield, Mrs. Austin has a happy faculty of seeing and hearing things, and knowing how to put a record of them on paper;-consequently, her report was quite interesting. Her account of a visit to the tomb of the martyred President Lincoln, and description of the monument erected to his memory was quite impressive.

Mr. Parmlee, a delegate from the Michigan Pomological Society, gave an address on the beautiful art of floriculture, and Prof. Baily read an essay on the soils and climate of Western Nebraska and Colorado, followed by remarks on the same subject by ex-Governor Furnas.

Wednesday evening was opened with reports from the various district committees of the Society, on the past season and its fruit crops. Some of these were of an encouraging nature, and some otherwise, showing that our Indiana neighbors, as a whole, fared rather badly the past year, especially from the effects of late frosts in the spring.

Then came the gem of the session, an able paper by the veteran scientist, Dr. R. T. Brown, of Indianapolis, entitled "How Plants Grow." He began as near the origin of life as science can probably go, namely, the cell, and tracing the mysterious unfoldings of nature, he developed the majestic oak and the humble violet from cells so similar that the most powerful microscope could detect no difference in their form or structure The law of growth in the different orders of plants was traced, and in every step the mighty but secret influence of an invisible directing power was shown to be operating. This lecture was listened to with much interest by a large audience, including many students of the State Normal School. A hearty vote of thanks was tendererd to the Doctor for his valuable lecture.

Doctor Furnas then read a lengthy report of the annual meeting of our Ohio State Horticulture Society, which he recently attended at Dayton, apologizing for the length of his report, by saying he found so much good in the meeting that he did not know where to condense. Of course, I felt somewhat complimented, and will reciprocate by saying that this was one of the best meetings it has been my privilege to attend. I left for home the next morning well pleased with my visit.

N. OHMER.

TIMBER BELTS AS PROTECTION TO ORCHARDS, ETC.

[This article and the next should have appeared eight or ten pages back.]

President Warder said he wished to correct an impression that prevails on the subject of protecting orchards and vineyards by belts of trees, hedges, etc. While it is undoubtedly true that such shelter is often of advantage in protecting trees, shrubs, and vines from injury by severe freezing in winter, it is also found to be true that where such protection is given, and the fruit is sheltered from the free circulation of air in the summer, there is more liability of injury from fungus diseases of all kinds, as blight, smut, scab, mildew, rot, etc. This is especially true of peaches and grapes, the fruit being much more reliable and free from diseases on open hillsides and where the winds have free scope than where sheltered by forests or hedge rows; hence, in climates no colder than ours, it is doubtful whether such shelter is of advantage.

For nurseries and home gardens, pleasure grounds, and the like, it is no doubt advantageous to have belts of evergreens or hedges on the north and west sides as wind-breaks, and for protection in winter. Prof. Tice found by experiment that on a cold, windy day in winter the air was several degrees warmer on the lee side of a group of evergreens than on the windward side.

Mr. Bateham said he had tried that experiment with a thermometer, and did not find more than one degree's difference; still he thought the injury from winds in severe weather was often greater than the degrees of cold would lead one to expect—the evaporation and motion being injurious at such times. He agreed with what had just been said respecting the advantages of open situations for vineyards and peach orchards; had seen many cases of injury from too much shelter, especially to vineyards, causing greater prevalence of mildew and rot. He regards winds and sunshine as preventives of all such diseases. In the prairie regions of the north-west, where the winds and cold are more severe and often cause destruction to trees in winter, shelter belts and hedges are, of course, to be recommended.

IS PLUM CULTURE A SUCCESS IN OHIO?

Mr. Bateham said he did not think it necessary to spend time at this meeting in discussing this question, but inasmuch as a good deal of planting of plum orchards had been going on in Ohio for several years, largely in consequence of statements of successful crops made at meetings of this Society and published in our reports, he thought there was some danger that such planting would be overdone, or at least that some of it would be unwisely done and result in disappointment to the planters. He wished to state some facts that he had observed during the year past, which are calculated to excite doubts in regard to the general success of plum orchards in our State.

It was supposed by most of us, a few years ago, that the curculio was the only real obstacle to successful plum culture in Ohio, as the disease called black-knot did not prevail here. But it is now seen that leaf-blight and consequent injury to trees by the winter is more to be dreaded than curculio or black-knot.

Mr. Bateham referred to what was said in last year's report (page 70) in regard to the losses of trees by winter-killing in the noted plum orchards of the Messrs. Browns, near Norwalk. He had a recent letter from these gentlemen, stating that but few trees were injured by the past winter, as it was a mild one; but many of their trees had again shed their leaves prematurely, greatly injuring the quality of the fruit and endangering the life of the trees if the coming winter proves a severe one. He had also seen much of this shedding of the foliage on plum trees before the fruit was ripe, in other places the past season, and should expect to hear of the death of many trees next spring, or at least failure of the fruit as a consequence. The wild goose and other native plums are not liable to injury of this kind, and the damson trees are not often affected. Planting on deep clayey or loamy soil, and mulching the surafce during summer, are the best means of prevention; (see remarks on black-knot in the latter part of this report.)

CULTURE OF SMALL FRUITS IN GREENE COUNTY.

The following notes of experiments in small fruit culture were written in response to the request of Secretary Bateham, by W. M. King & Son, of Yellow Springs, and were intended to be read at the annual meeting in Dayton, had time permitted. They contain some facts and suggestions of practical interest:

Blackberries.—Our soil is clayey loam, underlaid with limestone gravel, and having more or less black soil in low places. The Lawton and Kittatinny are the only kinds of blackberries we have fruited. The plants were set nine years ago. Three years ago they began to be affected with "red rust" We tried high manuring as a remedy, which failed. Afterwards we dug up and burned all the affected stools. The disease has seemed to be gradually disappearing.

Raspberries.—Our Doolittle Black-Caps, planted eight years ago, were badly winter-killed three years ago. Last year we had a medium crop. We have the Ontario, from Mr. Purdy, and we have now planted two hundred of the Gregg, from Mr. Ohmer. Of the red raspberries we have on trial the Clark, Philadelphia, St. Louis, Amazon, Highland, Hardy, Turner, Thwack, and Ganargua (the last named propagates from tips, and does not sucker). We prefer the Clark for home use; the Turner and Thwack promise well for market purposes.

Strawberries.—Of the varieties we have thoroughly tested, to wit, Captain Jack, Monarch of the West, Star of the West, Triumph of Cumberland, Springdale, Chas. Downing, Seth Boyden, Col. Cheney mixed with Wilson, Black Defiance, Excelsior (our seedling), we have no hesitancy in saying that for profit the Captain Jack leads them all. It withstands drouth, and bears equally well on clay loam and black intervale soil. Last season this variety commenced ripening May 28th, and continued bearing till June 30th.

We set our strawberries in rows four feet apart, and layer the runners to the right and left of each row; then after the old plants have borne two years, we plow them out, and put well rotted manure in the furrow where they stood, in one continuous line. This strengthens the plants on each side.

Grapevines on Peach Trees.—About twelve years ago we planted several rows of peach trees between rows of apple trees, in a young orchard, making the trees sixteen feet apart—the apples being thirty-six feet. The third spring after setting the peach trees, two-year old grapevines—Hartford Prolific and Concord varieties—were planted about nine inches from each peach tree. The land was then seeded to orchard grass, from which we cut two crops of hay each season. In one of the rows there are now standing twenty-three peach trees having a grapevine on each. The trees are six to eight inches in diameter, and the grapevine two to two and a half inches.

The severe winters have injured most of the peach trees, so that they have borne no fruit for several years, and but few leaves are on them, but in place of peaches we have grapes nearly every year, and often have had grapes when other fruits have failed. We also often have had grapes on these trees when our neighbors who trained their vines on trellises had none.

The grapevine does not seem to do as well on the apple tree as peach. We trained a few on apple trees that have large open tops, but they have not done well. The vines on peach trees are more healthy than those on trellis, and the fruit much less subject to rot or mildew. We prune the vines moderately in winter, but very little or none in summer.

In a letter of June 5th, 1879, the Messrs. King say the past severe winter, when the thermometer at their place reached 26° below zero, killed fully one half their blackberry canes, and the "red rust" has again appeared as bad as ever; so they intend to dig up their patch of this fruit and devote the land to other purposes. The cold also destroyed all the peach buds, so that their peach trees now, as for a number of previous years, are only useful as supports for the grapevines. The grape crop promises well.

REPORTS FROM JANUARY TO JULY, 1879.

Notwithstanding the severe cold of last January, when the thermometer marked 20° to 26° below zero in most parts of the State, the fruit crops generally this season are as plentiful as usual, considering it is an "off year" for the apple orchards. Peaches are a failure in the central and southern portions of the State, but plentiful in the northern section. Strawberries and raspberries were everywhere abundant; cherries a partial crop. Pears and plums promise nearly a fair crop, and grapes are freer from disease than for a number of years past, doubtless owing to the dry season. The following are notices of the principal local meetings that have occurred this summer.—SEC'Y.

THE CINCINNATI HORTICULTURAL SOCIETY.

This society was reorganized and put in working order the past winter. Dr. A E. Heighway is President, and F. P. Wolcott Secretary. Meetings are held every Saturday forenoon at the society's room, No. 180 Main street. Exhibitions of fruits and flowers and discussions are had at each meeting. There was a special exhibition of strawberries appointed for one meeting in June; but the time set was one week too late for the best display of this fruit, hence the show was not as large as it would otherwise have been, although a number of lots of fine berries were presented and premiums awarded for them.

The Raspberry Show of the society was on June 28th. There was a large attendance at the meeting, and a fine show of raspberries, including the following:

By N. Ohmer, of Dayton, New Rochelle, Reliance, Gregg, Thwack, Brandywine, Turner, Delaware, Early Prolific.

By G. W. Trowbridge, of Glendale, Mammoth Cluster, Ganargua, Grey, Clark.

J. R. Finch, Cincinnati, presented Mammoth Cluster, Muchmore Seedling, Miami Black-cap.

A. J. Markley, fine specimens of Turner.

Joseph Ellinger, Mammoth Cluster and a yellow seedling.

John Turner, good specimens of Kirtland.

Lewis Finch, fine samples of Muchmore Seedling.

A committee having been appointed at a previous meeting to visit some of the grounds of raspberry-growers near Cincinnati, their report was read at this meeting, and from it the following is condensed:

The first place visited was that of John Turner, Esq., Indian Hill, to look at a red raspberry, which he obtained under the name of Michigan. This was at once recognized as the Kirtland, or, as now known at the East, "Highland Hardy," a valuable early variety, nearly hardy, and worthy of general cultivation.

The second place visited was that of A. J. Markley, Esq., near Cherry Grove. The proprietor was not at home, but we were directed to the raspberry plantation, where a sight met our eyes pleasing to behold. There were raspberry bushes on our right, on our left, and in front, cultivated in rows, six feet apart, and about two feet thick, as dense as a hedge, heavily laden with bright red berries, and a large crowd of young men and boys busily engaged in picking and preparing the fruit for market. Upon inquiry we learned that thirty-five acres were planted of this variety, the cultivation of black-cap varieties being given up. After a close examination of the fruit, foliage, growth, and color of canes, we came to the unanimous conclusion it was the variety known as "Turner," which originated in the West some years since; and we feel gratified to know it has found so congenial a home in our midst, and has proven itself to be the hardy, prolific, and profitable red variety which has been claimed for it at the West.

The next place visited was that of Lewis Finch, Esq. (a member of the committee), where there were several acres in cultivation, all of the black-cap varieties, consisting of Mammoth Cluster, Miami, and a variety discovered in that vicinity some years since growing wild, which is prized by some on account of being several days earlier in ripening than either of the others, and quite productive.

The last place visited was that of Wm. Rothenhoefer, where we were shown quite a large plantation of black-cap raspberries, composed principally of the variety last mentioned, and where they exhibited their good size, excellent quality, and abundance of product. Being set in rows, twelve feet apart, with currant and gooseberry bushes in the center, ample space was given to produce the fruit in its perfection. We were also shown a new seedling raspberry, found growing wild, a hybrid, we presume, between the red and black-cap; fruit of a dark-red color, large size, quality good, reproducing itself from the tips after the manner of the black-cap family. It seems to be a very strong and rank grower, with few spines on the canes, and gave evidence of being a good bearer. In our opinion it should have a name, and be distributed for trial.

Discussion followed the report; Mr. Markley said it was six years since he planted the original acre of red raspberries, some of which he displayed to-day. The plants have been bearing heavily every year, and each year increasing in quantity; will probably produce 135 bushels this year per acre. In the cultivation he had tried both hills and rows, and prefers the latter. He plants six feet apart, has one patch seven feet, but prefers six feet. The first plants he purchased for "Baldwin's Choice," of a western nurseryman. Berries year before last averaged $6.85 per bushel. Last year, owing to frequent rains, the crop was poor; the average price was $3.60. This year expects the average to be about $5.00 per bushel. In gathering, he employed hands at fifty cents per day and board. Weighed his berries. A hand will pick about one hundred pounds per day. In handling he used shallow drawers; hauls in spring wagons.

WARREN COUNTY STRAWBERRY MEETING.

The June meeting of the Warren County Horticultural Society, near Lebanon, was strawberry day. There was a full attendance of members and a large number of visitors. Among the latter were President Warder and G. W. Trowbridge, of the State Horticultural Society. The display of strawberries was not large but good. Mr. Trowbridge had nice samples of the Sharpless, which were awarded the first premium. Several lots of early May cherries were exhibited. Interesting discussion was had (after a nice dinner) and reports made respecting orchards, etc., showing better fruit propects than in most other parts of the State, especially for apples.

Mr. Beller said his Fall Pippin, Northern Spy, Baldwin, and Keswick Codling would yield an average crop. His early Harvest and a few other early varieties were scarce.

Mr. Irons reported that in his orchard of two thousand trees the crop would be fair. Early Harvest an average crop; Red Astracan trees were full; has forty trees of Maiden Blush that are full, and have not failed in forty years; Smith Cider seldom fails. Pears—Bartletts a failure; some other varieties were full. Plums few, and all stung.

J. C. Anderson, from Carlisle, did not report as favorably from his locality.

Dr. Warder, from Hamilton county, reported half a crop.

Mr. Trowbridge, of Glendale, reported apple crop light; cherries about half a crop.

Mr. Mardis stated that some varieties of pears were short, while others were full. His Bellflower apple trees were fuller than usual.

Mr. Robinson said his apple crop would not be large. The Baldwin and Northern Spy were full. His grapes of about ten varieties are all badly injured by the winter.

The July meeting of the society was also well attended and highly interesting. A number of members exhibited ripe apples of the early varieties, along with dishes of raspberries, and some pears and grapes, besides garden vegetables. Discussion was had on the methods of grafting grapes; also the causes of grape rot, etc.

THE MONTGOMERY SOCIETY MEETINGS.

These have been as freely attended, and the proceedings as interesting and useful as in any previous season. The first Wednesday of each month is society day, and winter or summer, rain or shine, a meeting is held at the place appointed. Such a thing as the failure of a meeting has not occurred in several years. Commonly an essay is read at the meeting, on some useful or interesting topic, followed by discussion—and a good social picnic-dinner is one of the attractions.

At the June meeeting, strawberries are the chief attraction and the topic of discussion. This year there was a very large attendance, including quite a delegation from the horticultural society at Richmond, Indiana. Dr. Warder and Mr. Trowbridge, of Hamilton county, were also present. A large display of strawberries was made, especially by Mr. Ohmer, who presented thirteen varieties, and read the following as his opinion respecting each:

Mr. Ohmer's Strawberries.—If I wanted a strawberry that was not strictly first class in quality, though good, handsome, and of fair size, bearing enormously with but little culture, I would plant the Crescent Seedling. This is preëminently the lazy man's strawberry.

Did I want a strawberry that ripened early, large size, handsome, productive, and of good quality, I would plant the Forest Rose.

If I wanted a strawberry of enormous size, scarcely two alike, a little late ripening, handsome and good, I would plant the Sharpless.

For a late ripening, large and productive variety, I would plant the Glendale, next the Kentucky.

One of the most desirable varieties I have is the Champion. It is very productive, good size, handsome, and fair quality.

The Black Defiance is a large, handsome, dark-red berry; quality first class, though not a good bearer.

Captain Jack is a great bearer, but no improvement on the Wilson (which it resembles); too sour and too many small berries.

Wilson's Albany is yet the great market and shipping berry; it now looks, however, as if it was about to be superseded by several of the new candidates.

Great American, with me, is not worthy of its name; it does not bear sufficiently, but may do better on light soils.

Monarch of the West is a large and productive berry, becoming quite popular. The objection I have to it is that it does not ripen up evenly, the point of the berry remaining a light yellow.

Charles Downing is an old and popular berry. Large and handsome—first quality; does well almost everywhere.

Col. Cheney is a handsome berry, good, but not profitable on my soil. The same may be said of the Sterling.

Mr. Steele and Dr. Warder skoke of high praise of Burr's Pine, Longworth's Prolific, and one or two others of the older class, as unequaled in quality by any of the newer ones, and said there was a disposition at the present time to sacrifice quality for size.

Mr. Trowbridge commended the Cumberland Triumph, and said it was a good fertilizer to plant alongside of pistillate varieties like Crescent Seedling. He was pleased with Monarch of the West, Springdale, and Sharpless.

The committee on Orchard Prospects reported a large falling off of the apples, so that the crop would be much less than had been anticipated. Early varieties are doing better than late. The plum crop is suffering badly from curculio, Wild Goose with the rest. Pears also will be a light crop. In some localities apples were almost a failure. No peaches in that part of the State. Currants and gooseberries generally injured greatly by the worm. Strawberry crop is lessened by drouth, but raspberries promise well.

The raspberry meeting, July 2d, was very appropriately on the grounds of Mr. Ohmer. The attendance was again very large, and quite a number of visitors present from a distance, attracted, doubtless, by the fame of Mr. Ohmer's Gregg raspberry crop; among them were President Heighway, of the Cincinnati Horticultural Society, and several of its leading members, including Mr. Markley, the great grower of red raspberries, mentioned on a preceding page. After dinner and visiting the berry grounds, discussion on raspberries was had. Mr. Markley being called up, spoke of his success with the Turner variety, and said it was more profitable with him than any other that he could grow for the Cincinnati market. He could raise the reds with less expense than the blacks, and they brought a higher price.

Mr. Ohmer said it costs him much less to raise blacks, especially the Gregg, than any of the reds, and they were more profitable for shipping and for Dayton market. He found the Gregg the most productive, hardiest, largest, and most profitable of all. Of the reds he is inclined to give the preference to the Delaware.

The committee on fruits exhibitted say, "Mr. Ohmer shows Thwack, a fine, showy red raspberry, good for shipping long distances; Brandywine, red, of good color and flavor; Delaware, a new red berry of fine appearance and quality; Reliance, a purple berry of fair flavor and good size; New Rochelle, a purple berry of fine flavor, large, and very productive; and lastly the Gregg, which is no doubt the king of the blackcaps—very large, of fine flavor, and prodigiously productive, as we have all seen.

The report on the prospect of tree fruits was more favorable than at the June meeting—less falling off of apples, pears, and plums—Wild Goose still ahead. Pears doing well generally, excepting the Bartletts. Grape prospects fair, but some vines injured badly by the winter; less rotting of the fruit than usual.

STRAWBERRY SHOW IN PORTAGE COUNTY.

The newly organized horticultural society of Portage county invited a strawberry show in connection with their monthly meeting, June 16th, at the residence of G. W Dean, near Kent. There was a full attendance of the members of the society, and quite a large number of visitors from outside the county, several of whom contributed berries for the exhibition. Prominent among these were W. B. Storer, of Akron, the principal grower of the Glendale variety, and Mathew Crawford, a noted grower of seedlings and all the new sorts, at Cuyahoga Falls. There were also present of the committee of the State Horticultural Society, N. Ohmer, L. Weltz, G. H. Miller, and Secretary Bateham.

Mr. Crawford exhibited fifteen varieties of strawberries—not half the number he has in cultivation—and in compliance with a request of the society, he read an essay on the varieties of strawberries and their culture. Much discussion was also had on these topics. The varieties presented by Mr. Crawford were Capt. Jack, Duchess, Jucunda, Seth Boyden, Longfellow, Sterling, Chas. Downing, Cumberland, Norman, New Dominion, Martha, Springdale, Early Superior, Crawford's 18, Triumph de Gand. Mr. Storer presented Glendale, Kentucky, and a new variety named Brilliant. Several other growers exhibited Forest Rose, Crescent, Great American, Monarch, Sterling, Sharpless, and other noted new sorts, as well as Burr's Pine, Wilson, and other old standards. At the request of the officers of the society, Mr. Bateham wrote a report of the strawberry show, which follows:

Mr. Bateham's Report on the Strawberries.—In behalf of the members of our State Horticultural Committee, I would state that we were highly pleased with the meeting and exhibition of the Portage county society, at the grounds of Mr. Dean. The number of persons present and the interest manifested, as well as the good social cheer, were highly gratifying, and promise well for the future success of the society. The display of strawberries was also much larger and finer than we expected to see; in fact we do not remember ever having witnessed a better display of this fruit in Ohio. It will be seen by the report of the secretary, there were assortments from twelve different growers, several of them from outside the county. The number of plates was about eighty, embracing not less than thirty distinct varieties, including most of the noted new sorts, as well as the best old ones. Most of the varieties were well grown and correctly labeled. The opinions of the experts who were present were pretty fully expressed in the essay of Mr. Crawford and the remarks that followed; but I will add a few brief notes from my own observation.

In regard to the Glendale, the time was a little too early for this variety, hence the berries lacked in sweetness, as was also the case with Sharpless, Great American, and several other large sorts, and in fact the cold weather affected the flavor of nearly all varieties, so that people remarked they needed more sugar than usual. Objection was made to the Glendale that it had a rather coarse appearance in the plate or basket, on account of its lack of polish and the large size of its calyx; but if it proves late as is stated, and a good bearer, it will be valuable for market. The Sharpless and Great American have the fault of being irregular in shape and size, especially the first that ripen. It may be that this can be remedied, in part, by planting other sorts by their side, so as to secure better fertilization. They are of good color and quality, and deserving fair trial. Forest Rose was not so large as we saw it last year, though quite handsome and good—the color a little too pale, and the texture too soft for a first-rate market fruit. Cumberland Triumph is quite large and good—better for home use than for market. Monarch of the West is large and showy; bears well on all soils, and said to produce more the third year than first or second. It is popular as a market fruit around Cleveland, in spite of its fault of not ripening well at the tips. Jucunda is one of the handsomest and best of the large kinds, and is more grown than any other of its class for the Cleveland market. It has come into favor quite rapidly of late among the growers near that city, especially for the strong clay lands near the lake shore. It is grown there in matted rows, not kept in hills, as has heretofore been thought necessary. Crescent Seedling, Captain Jack, and Duchess are strong and persistent growing varieties, thriving in all kinds of soil, and with little or no culture, hence called lazy men's berries. They are also of fair size and quality, and may prove quite profitable for market where the larger and finer sorts are not plentiful. They should not be allowed to grow so thickly as to exclude sunlight and air from the berries Longfellow is a handsome new seedling, by A. D. Webb, of Bowling Green, Ky., deserving of fair trial, alone with Mr. Crawford's seedling, Martha, which is of good size and remarkably rich flavor. Mr. Storer's seedling, Brilliant, is also quite handsone and good, and deserving fair trial, along with several others, like Springdale, New Dominion, Early Surprise, etc.

In the discussion at the meeting, an important point was urged by Mr. Weltz and one or two other experienced strawberry growers, viz., that it was of much benefit to the productiveness of pistillate varieties, like Green Prolific, Crescent Seedling, etc., to plant alongside of them strongly staminate varieties, of which there are a larger number.

Arrangement was made for a show of raspberries, and an essay on this fruit, at the July meeting of the society. H. Y. Beebe, Esq., is President, and Rev. A. Wilson, Secretary, Ravenna.

STARK COUNTY STRAWBERRY MEETING.

The Stark County Horticultural Society is also of recent formation. Their strawberry show was held June 20th, at the residence of their secretary, J. F. Kneisz, near Canton. There was a good display of berries, and a large attendance, both much the same as at the Portage meeting. Mr. Crawford was again present with strawberries, and was persuaded to repeat his essay on strawberry culture. All the leading varieties were exhibited by different growers, and remarks were made on their merits, etc. Among the visitors present were Ohmer, Weltz, Miller, and Bateham, of the State committee (all but the last being on their way home from a meeting at Cleveland), and W. C. Barry, of Rochester, N. Y. All were much gratified with the interest and spirit of the meeting. A good band of music was present, and it was a very social and cheerful gathering, promising well for the future growth and usefulness of the society.

THE RICHLAND COUNTY SOCIETY

Had an exhibition of strawberries in June and of raspberries in July, both of which were reported as well attended and quite instructive; the display of raspberries being especially fine, and affording much interest to growers and spectators. F. R. Palmer the President, gave an address on small fruits and their culture, at the July meeting.

MUSKINGUM COUNTY SOCIETY

Also reports good meetings and shows of strawberries and raspberries, cherries, etc., in June and July. This society is doing good work, after the model of the Montgomery society.

THE EASTERN OHIO SOCIETY

Held its strawberry meeting near Barnesville, June 10th. There was a good attendance, and a fair show of berries, but not as extensive as usual for that society, the dry weather having been unfavorable for best quality of fruit. J. Edgerton, the President, gave an instructive address on strawberry culture; and G. H. Miller, of the State committee took part with others in the discussion.

LUCAS COUNTY SOCIETY

Is more engaged in the culture of orchard fruits than berries. Their monthly meetings are of the social order and well sustained, having exhibitions of different fruits in their season, with discussions on their culture, and other topics of timely interest. F. Granger, of West Toledo, is President, and W. W. Farnesworth, Waterville, Secretary.

COMMITTEE MEETING AT CLEVELAND.

STRAWBERRY SHOW—VISIT TO THE GROWERS.

A meeting of the committee of the State Society was held at Cleveland, June 18th and 19th, in connection with the annual meeting of the American Nurserymen and Florists' Association. Public invitation had been given for an exhibition of strawberries, especially the newer varieties, at the hall, and an interesting exhibition was the result, embracing the following varieties: Sharpless, Cumberland Triumph, Crescent Seedling, Captain Jack, Charles Downing, Great American, Colonel Wilder, Colonel Cheney, Monarch of the West, Forest Rose, Glendale, Sterling, Brilliant, Martha, Springdale, Longfellow, Jucunda, Marshal McMahon, Seth Boyden, Wilson.

Secretary Bateham was appointed, along with two eastern experts, to examine and report on these fruits. The following are his own comments thereon, condensed from his report of the meeting, written for the *Ohio Farmer:*

"I give the following brief comments as expessing in part the present popular sentiment, but remarking that, in regard to some of the newer sorts, many of our people have never seen or tasted the fruit until this season, and owing to the very cool weather during the time of ripening, all varieties were deficient in flavor, and more acid than when ripened during warm weather.

"Of Sharpless, the samples were not fully ripe, especially those from Rochester, and being the first that were ripening, more of them than usual were cockscomb-shaped, and the lot had a rough appearance; while the flavor was also undeveloped, and hence the public expectation in regard to the variety was not met. The same is true in the main of the Great American; but some samples of this were better ripened. It is a large berry, of dark red color, and fair quality, but too irregular in shape, looking as though the blossoms were not well fertilized. It is also found to be lacking in productiveness. Both these deserve further trial. Monarch of the West has given general satisfaction this year, and is gaining friends in spite of its fault of not coloring well at the tip when otherwise ripe. Some are planting it largely for market. Forest Rose has not been fairly tested in the northern parts of our State, and the only sample exhibited was not of full size. The general impression respecting it is favorable; but one or two Cleveland growers thought it would not suit their purpose as well as the Jucunda, which it somewhat resembles. The Glendale samples were all from Akron, and made a fine appearance. The berries were not fully ripe, and this, together with the cold weather, caused deficiency of flavor so that visitors were a little disappointed. Objection was also made that the fruit has a rough appearance in the box, owing to the large size of its calyx, and the lack of that gloss on the surface which adds so much to the beauty of the Jucunda. The main question seems to be in regard to the lateness of ripening as giving value to the Glendale, and on this point there is not proof as yet. Cumberland Triumph and Springdale are fine, large berries, and were highly commended by several growers, especially for home use and near market. Captain Jack and Crescent Seedling are berries of fair size and appearance; not large nor of first quality, but of remarkably vigorous and persistent growth, very productive, and adapted for poor soils and no culture. The quality of the fruit is fair when the plants are not allowed to grow so thickly as to exclude sunlight from the berries. Martha is a promising new seedling by Mr. Crawford, remarkable for its sweet and rich flavor; probably too soft for a market fruit. Mr. Storer's seedling, the Brilliant, is of good appearance and quality; color, a deep glossy red, like Sharpless and Great American. It is deserving of trial, as is also the Longfellow, a seedling by A. D. Webb, of Bowling Green, N. Y. It is of fine appearance and quality."

Visit to Strawberry Grounds.—The majority of nurserymen and florists at the meeting expressed surprise at the abundance and cheapness of strawberries, in the Cleveland market, and also that so much of the fruit was of the Jucunda variety; most of the large growers in that vicinity having planted it largely within a few years past.

Our State committee spent one forenoon in visiting a number of the largest strawberry grounds, which are located a few miles west of the city, between the line of the Rocky River Railroad and the lake shore; where there is a long stretch of strong clay soil, resting on Erie shale, which, when well drained and worked, is found admirably adapted for strawberries and raspberries, and is largely devoted to these fruits. This soil is much like that of the famous Knox fruit farm near Pittsburgh, where the Jucunda gained such great notoriety a few years ago. Here, too, it is found to succeed so well as to take the lead of all other varieties in the estimation of the market growers. The Wilson is grown about as largely as Jucunda, as the fruit ripens a few days earlier, and it is more productive; but as soon as the rush of fruit begins, and the price is low, the Jucunda berries bring twice as much as the Wilson, and being easier to pick and to sell, they are the more profitable, even though the yield only averages half as great.

Our first call was at the grounds of S. B. Marshall & Son, who have seven acres of strawberries—about half each Wilson and Jucunda, with a few others on trial. They were just passing the height of their picking, and a day or two before, sent into the city 120 bushels in one day. At Mr. Southern's, Mr. Andrews', and one or two others, we found similar plantations of strawberries, all on the same range of soil, and all about the same varieties and culture. Hosts of women and boys were engaged in picking the berries, for which they were paid one cent a quart; for the Wilsons they had generally been paid five cents per basket of four quarts. The notion that the Jucunda variety would not do well except grown in hills, with the runners kept cut off, was thoroughly exploded by the experience of these growers. All of them plant and cultivate it the same as the Wilson, only setting the plants a trifle further apart in the rows; then cultivating by horse one way and letting the plants run together the other—what is called the matted-row system. Mulch of straw or marsh hay is applied in the fall, and removed for culture in spring, then replaced for the summer. After the second crop of fruit the ground is usually too weedy for bearing another year, but occasionally three crops are taken before plowing up.

In passing the grounds and residence of the late Dr. Kirtland, our party of a dozen of his old friends could not refrain from stopping to take a look at the many fine plants and trees planted by his hands and nurtured with loving care; and with reverence view the spot where his remains rest beneath the umbrageous shade, and where we found a wreath of fresh flowers had been placed upon the sacred turf by loving hands. Mrs. Pease, the daughter of Dr. K., received us gracefully, Mr. Pease being absent.

THE NURSERYMEN'S CONVENTION.

This meeting—already mentioned—at Cleveland, June 17th to 20th, was counted a very successful one. Many members of the profession from the East as well as the

West, were present, and the speeches, discussions, etc., were marked by much ability and good judgment. Several questions of much importance to the fraternity were talked up quite thoroughly, and such conclusions reached as cannot fail to be beneficial to the horticultural public as well as to the nurserymen. Prominent among these was the question how to prevent or check the impositions practiced by tree dealers and pretended nursery agents. Sound advice was given on this point, and also on questions as to the future of the nursery business—setting forth the fact that the production of fruit trees has been overdone in a number of the States, and prices in many cases have been forced below the cost of production; and hence had come also ruinous competition in the business.

Among the best results of the meeting will be a more friendly feeling towards each other, and a higher sense of honor among the members of the fraternity generally. This could hardly have been otherwise with such men as were the leading spirits of this convention; among whom were Manning and Strong, of Massachuetts; Parsons, Hooker, Barry, Ellwanger, Moody, Woodward, Hubbard, Hoag, Henderson, Smith, and others, of New York; Meehan, of Pennsylvania; Harrison, Campbell, and others, of Ohio; Scott, Whitney, Perriam, Templin, Stickney, Bryant, Spalding, Meissner, and others, of the West. The proceedings of the convention will shortly be published in pamphlet form, by the Secretary of the association, D. Wilmot Scott, Galena, Ill.

CAUSE OF GRAPE ROT AND MILDEW.

The season of 1879 affords some valuable suggestions in regard to the causes of these diseases. There is less prevalance of rot and mildew this season, in Ohio and several States adjacent, than has been for several years previous. The reason for this exemption is, no doubt, the general prevalence of drought during June and July, and the small amount of hot, damp, and sultry weather. This exactly accords with the observations of the late J. C. Huntington, of Kelley's Island, which were continued for ten successive years, and it was invariably found that much rainfall in June or the first half of July was followed by rot and mildew; while a scarcity of rain in those months gave good grape crops. (See Hort. Rep. 1868.) And in our last year's report, page 50, Addison Kelley, the oldest grape grower on the island, says, "A close, hot, damp atmosphere causes rot and mildew. * * * The rot often commences soon after heavy rains, if succeeded by hot and sultry weather." My own observations the past ten years accord with these statements. So common has it been found that rot immediately followed thunder showers, that many people have expressed the belief that electricity has something to do in causing the disease.

I think it is clearly shown that the cause of the disease is atmospheric, or the weather, and not anything inherent in the vine, or the soil, or method of culture, nor the work of insects, although these may, in some cases, aggravate the evil. But we need to push our investigations further and see if we cannot discover how it is that grape rot and mildew are caused by the kind of weather described.

Scientists are agreed that these diseases are of a fungus nature, and that fungus spores or seeds are constantly floating in the air, but do not commonly take root or grow, except in damp and close atmosphere—just as we see mildew prevail in unventilated cellars and closets in sultry, damp weather. Vegetable juices, the sap of grape vines or pulp of young fruit, takes on fermentive or fungus action very speedily, at such a time, if the vital process of elaboration in the leaves is suspended, or materially checked—see remarks on this point by Dr. McMurtrie, chemist of the Department of Agriculture at Washington, in the report of the Department for 1877, page 81—but, in my opinion, Dr. McMurtrie fails to apprehend the true cause of the derangement of the healthy action of grape leaves which induces rot and mildew. I believe it is from the *stoppage* of *evaporation from the leaves*, at a time when the flow of sap is stimulated to the greatest activity by rains and hot weather, the atmosphere at the time being saturated with moisture, the barometer low, and an absence of wind and sunshine—so that clothes will not dry on the line. Evaporation from the leaves cannot go on in such weather; and, of course, assimilation of the juices is stopped. So great is the plethora of sap at such times that it is often forced to exude from the surface of the leaves, and may be seen on their margins like drops of dew, of a cloudy and sultry day.

This moisture coming from within, as well as that from rain and dew, and exhalation from the moist earth, favors the growth of fungus spores on the leaves and young fruit, and their lack of vital action at the time permits the fungus roots to penetrate, and mildew or rot is the result.

This explains why it is that low and damp grounds are so unfavorable for vineyards, and why the general absence of fogs and dews on the islands renders the liability to these diseases so much less there than elsewhere. It also accounts for the exemption of grapes from disease when trained on buildings where sheltered from rain and dew, and the superiority of vineyards located on hills, and where there is the freest circulation of air.

These facts and inferences are here set forth, in order that grape growers may compare them with their own observations, and perhaps be able to adopt some measures that will lessen their liability to suffer losses from these maladies.

Potato rot, or potato blight is the effect of another species of *peronospora*, and is produced by exactly the same cause as grape mildew and rot, to wit: hot, damp, and cloudy weather, causing a stoppage of evaporation from the leaves when there is a rapid flow of sap in the plants.

PEAR TREE AND APPLE TWIG BLIGHT.

These two forms of disease are somewhat alike, but differ so much from grape rot and mildew that most people will be slow to believe they are all of the same nature and produced by the same causes; but such I believe is the fact.

There are, however, two forms of pear-tree blight; the one commonly referred to as true blight or "fire blight," attacks the most thrifty-growing trees, and such as showed no previous injury by the winter or otherwise; and, like the grape rot, it appears suddenly after rainy, hot, and sultry weather, when the circulation of sap is most rapid, and evaporation and elaboration in the leaves are stopped or checked by the excess of moisture in the atmosphere and the absence of sunshine and wind. Then, as in case of the grape disease referred to, the moisture outside of the leaves and young shoots and the stagnation within cause fungus spores to vegetate, and to push their roots inside the bark, especially at every crevice or insect puncture, and the poison spreads as rapidly as the action of yeast—and blight is the result.

The other form of the disease is commonly called frozen-sap blight, and is induced by injury done to the tree by the winter, usually after the premature shedding of the leaves in summer or early autumn, and the starting of the sap afresh after fall rains occur, thus rendering the tree unfit to withstand severe cold; and on cutting the branches in spring, the wood will be found discolorod; but the tree starts and grows in the spring, as though nothing was the matter, until the hot and sultry weather occurs in June or July, then the vitiated sap takes on fungus action, and blight is the result.

Of course the best way to prevent the first form of pear blight is to avoid the causes of luxuriant growth, or an excessive flow of sap during hot weather—as we find the varieties like the Seckel, that are naturally slow growers, commonly exempt from blight; and most pear growers find it best to omit cultivation of pear orchards after the trees have been planted three or four years, unless the soil is too poor to cause rapid growth.

The best way to prevent the other form, or frozen-sap blight, is to mulch heavily the soil over the roots of the trees during summer, so as to protect them from the effects of heat and drouth, and thus prevent the untimely shedding of the leaves. It sometimes happens that trees are injured by severe winters, when the foliage had not fallen prematurely, but this is not the general rule.

Apple Twig Blight commonly occurs a little earlier in the season than pear-tree blight, and while the leaves and twigs are young; but always just after rainy and hot, sultry weather, such as produces grape rot and pear tree blight. But in the apple tree the poison does not often spread beyond the growth of the present season; and hence the life of the tree is not often endangered, though sometimes the loss of foliage is so great as to cause damage to the crop of fruit, and to the growth of the tree for the season. I have not seen or heard of a serious case of twig blight this season, nor a case of pear blight that was not obviously the result of injury by the winter, or where blight had commenced last season, but was checked by cutting away diseased parts. The reason for this exemption is no doubt the same as that of grape diseases—dry weather preventing the free growth of the trees, and not favoring the growth of fungi.

Pear-growers are invited to note carefully all the facts relating to cases of blight that occur on their premises, and observe whether they accord with the theory here set forth respecting the causes of this malady. When the causes are understood we may hope to find methods of prevention.

GRAPE MILDEW ILLUSTRATED.

But few readers of this report have access to books or illustrations descriptive of the various kinds of mildew and other fungi, or have opportunity to examine with a microscope these minute and curious forms of vegetable growth; hence the following brief essay will, no doubt, prove instructive to many. It is condensed from the report of the Michigan Pomological Society for 1877, and was written by Byron D. Halsted, M.S., formerly of the Bussey Institute, Massachusetts, and now connected with the *American Agriculturist.* We are indebted to Mr. H. for the use of the illustrations.—*Sec'y.*

Two species of mildew are injurious to grape vines in this country. One of these is commonly called the European mildew, or *oidium,* as it mostly affects European species of vines, though others are not wholly exempt from its attacks. The other is called American grape mildew (*peronospora viticola*), because it is the most mischievous to American vines, and is not found in European vineyards.

Let us first get a clear conception of the peronospora as we see it with the naked eye, after which we will observe it more minutely under the compound microscope. As one passes through a vineyard in midsummer, especially after warm and rainy weather about the middle of July, he will frequently observe that the leaves are more or less covered with yellowish spots. Should we take one of these leaves thus seemingly taking on its autumnal tints, and turn it over, we will find that the under surface of just those yellowish portions is covered with a fine, white growth of a shiny, frosty appearance. Here on the under side of the leaf we then find the external evidences of the cause of the discoloration which we saw upon the upper side. Fig. 1 is a leaf of *Vitis æstivalis,* showing the under side of the yellow spots, with the mildew as dark patches. There is no part of the leaf more subject to attack than another, and when the season is especially favorable the whole leaf is often covered. This mildew grows in frosty spots upon the under side of the leaves, causing a noticeable discoloration upon the upper side. Farther than this we cannot go without the microscope. If now we take one of the diseased leaves and make a thin cross-section with a sharp razor through a fosty spot, and put it under a high power of the microscope, we will see what is represented in Fig. 2. In *b* we have a view of a cross-section of the leaf, drawn for convenience sake with the under side uppermost.

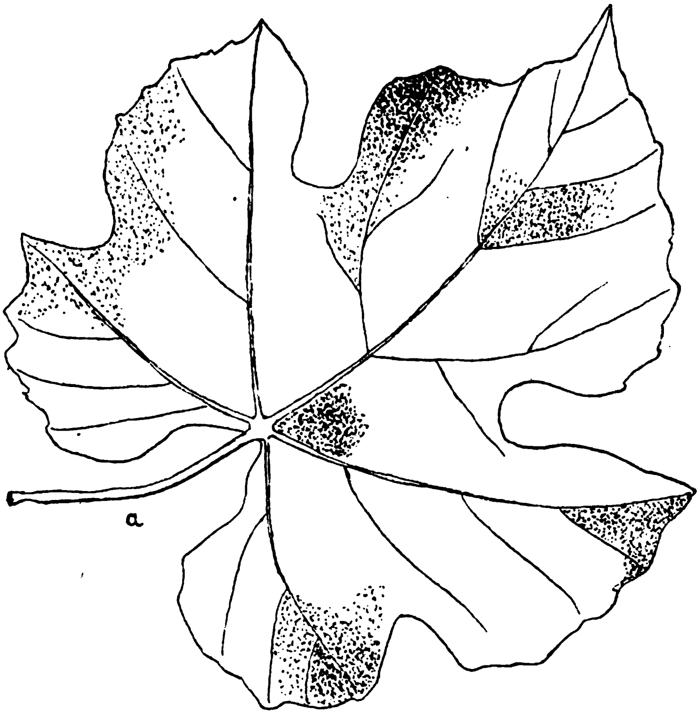

FIG. 1.

The dense upper portion of the leaf is made up of two layers of cells placed close together, as seen in the lower portion of the figure. Between these layers and the epidermis on the under side of the leaf there is the *mesophyll,* consisting of the loosely arranged chlorophyll-bearing cells—the green cells which do the work of assimilating. It is between these cells, in the inter-cellular spaces, that the threads of the fungus grow, as is shown in the figure, where the threads are much more highly magnified than the leaf-cells, that they may be the better seen. As these vegetative threads grow along through the loose tissue of the leaf they send out into the cells small projections, which are called "suckers" or *haustoria.*

At *E,* Fig. 3, are shown four cells of the grape, with the fungus thread colored dark and passing between them. The haustoria are seen at *i i.* It is by means of these small

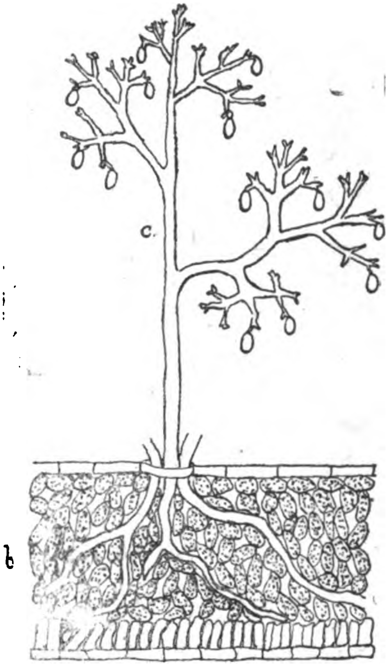

FIG. 2.

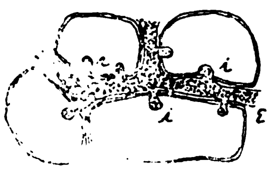

FIG. 3.

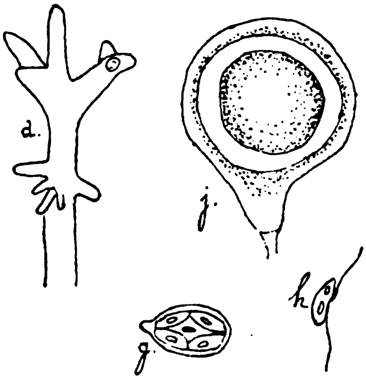

FIG. 4.

projections that the peronospora is enabled to take up the elaborated material contained in the grape cells, and appropriate it to its own growth and reproduction. They play the part for the fungus that the root-hairs do for the grape plant—they seek out and absorb the food materials. In the vine they are situated on the roots, and penetrate between the particles of soil, while in the former they are situated on the threads of the fungus, within the tissue of the grape plant. When the leaf is first attacked it is only these threads in the interior of the tissue that can be found, but soon they turn towards the under side, and finding the breathing-pores (stomata), they pass out sometimes to the number of a dozen from each stoma. After this they begin a series of branchings, and finally each assumes the form of a miniature tree, one of which is represented in Fig. 2. It is the vast multitude of these little branched tops which gives the white, frosty appearance when viewed with the naked eye.

The non-sexual spores are borne singly on the ultimate branches, which are numbered only by thousands and millions on a single leaf. In fig. 4, *d* represents a highly magnified tip of a branch. It is by these spores that the disease is propagated so rapidly when the weather is especially favorable for their germination and growth. In this fungus as well as in the potato rot (another species of *peronospora*) and a number of other members of the order, the germination is not the simple kind by the prolongation of the spore contents into a tube and filament, but by *zoöspores*. In this case the contents of the spore are divided up into from six to ten oval bodies, which finally rupture the spore wall and then escape, each being provided with two little hair-like processes by which they are enabled to move about. In fig. 4, *g* represents one of the spores, or perhaps more properly a sporangium, which is borne on the terminal branches of *c* and *d*, with its contents divided up into the *zoöspores*, one of which is seen in *h*, highly magnified, with its two cilia.

> We see, then, that when a single diseased spot has produced its spores, they germinate in a few hours, and there are a multitude of these moving *zoöspores* produced therefrom, which pass to a new place on the same or another leaf, and there coming to rest send their threads into the leaf, and a new seat of destruction is soon established.
>
> Besides these aerial spores just described, there is another kind formed towards the close of the season within the tissue of the foster plant. They are called sexual spores because it is necessary that the contents of two different threads should mingle in order that one of these spores may arise. These spores are larger than the aerial ones, one of which is represented, highly magnified, at fig. 5, and are well provided with a thick covering of cellulose. As they are imbedded in the tissue of the grape leaf, they can serve no purpose in the immediate spreading of the disease. In fact, they are not usually formed until late in the season, and their special office undoubtedly is to carry the mildew over the severe months of winter. In the spring they germinate by *zoöspores* similar to the non-sexual spores. These little motile bodies, finding their way to the fresh leaves of the grape vine, cause a repetition of the trouble of the previous years, and of the circumstances which we have just described.

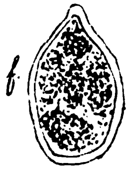

Fig. 5.

In speaking of the *oidium*, or European mildew, in *The Country Gentleman*, Mr. Halsted says:

> This fungus, unlike the peronospora, is a surface-grower entirely, never sending its threads down through the tissue of the leaf, and besides, is not confined to the under side. The fine threads running here and there over the surface of the leaves, young stems, and berries, give, with the aid of a hand lens, a fine, cobwebby appearance to the surface, and after the multitude of spores have formed, the parts affected look to the naked eye as if they had been dusted with flour. It never has those well-defined, frosty spots, characteristics of the peronospora, and usually develops earlier in the season, and is more deliberate in its progress. Its sexual spores are superficial, and when ripe, are inclosed in a thick brown covering of sufficient size to be seen with the naked eye.
>
> The fact that the oidium often attacks the young grapes, makes this mildew quite destructive. As is often the case, the two kinds grow together, and then it is difficult to to say how much injury is to be attributed to each one.
>
> The oidium is never found within the tissue of the grape plant. Rising from the surface of the leaf are certain short filaments, the tips of which are cut off by cell division, and these cells, thus formed, soon become detached, and constitute the non-sexual spores of the fungus. It is to the presence of these spores in vast quantities that the floury appearance of the affected parts is due. These spores germinate in a few hours by pushing out a tube, generally at one end—never by producing a number of *zoöspores*, as we have seen is the case in peronospora. It is by means of the rapid formation and speedy germination of those *conidial* spores that the oidium spreads itself so rapidly. As we have said, this mildew is not confined to any portion of the plant; in fact all parts, except the old stems, are more or less affected when the season is especially favorable for its growth.

THE BAG METHOD OF PROTECTING GRAPES.

In reference to this matter, as set forth in the letter of Mr. Scarborough, read at the annual meeting at Dayton (see p. 49), the report of the Kentucky State Horticultural Society for 1879 contains an essay o grape culture, by Thos. S. Kennedy, Esq., a well known horticulturist near Louisville, from which it appears that the bag method of protecting grapes has been practiced to some extent in that State for quite a number of years; but the remarks of Mr. K would make it appear that the use of paper bags had not been as successful there as at Cincinnati. The following are his words on this subject:

But a better protection from insects and diseases I have found in covering each bunch of grapes with a close fitting bag made of cheap cross-bar musquito netting, costing last season only forty-five cents per piece of eight yards long by two wide—one square foot being sufficient for a bag. It is slipped over the bunch and tied closely around the stem with a string. This simple contrivance is a complete protection against all kinds of insects, but only a partial preventive of rot. I have used this covering for grapes for more than fifteen years, and am satisfied that without this safeguard I would not be able to save any considerable portion of my annual crops from destruction by insects. Under this covering the grapes have fully ripened and hung long afterwards on the vines until wanted.

About seven years ago Mr. Younglove, of Bowling Green, exhibited at the Louisville fair a very large collection of grapes that had been protected with paper bags. These grapes were very clear and translucent, and only slightly colored. The darkest kinds of red grapes had only a light pink tinge, and no person could tell what kinds any of them were by their appearance. The paper bags had evidently excluded the sunlight and caused the grapes to mature without attaining their natural color. The flavor, too, was insipid and watery. The contrast between these and the rich colors of the grapes exhibited from my vineyard caused the judges who awarded premiums to decide that the netting was a better covering than paper bags.

The last paragraph above is so in conflict with the statements of our Cincinnati friends, that I was prompted to address a line to Mr. Younglove, of Bowling Green—now residing at Nashville—asking him for the particulars of his experience with the bag method. He has kindly sent the following reply, which, it will be seen, materially conflicts with the statements of Mr. Kennedy, whose recollections of seven years ago seem to have been somewhat at fault.—SEC'Y.

LETTER FROM MR. YOUNGLOVE.

M. B. BATEHAM—*Dear Sir:* In answer to your inquiries about protecting grapes with paper bags, I have read Mr. Kennedy's article to which you allude, and I find that his memory is singularly at fault. At the fair to which he refers, I took over seventy-five dollars in premiums on the grapes which I exhibited in competition with his. I did not take the premium on the best collection, for I had only fifty-five varieties and he had over one hundred; besides, he had the prestige of having always beaten every one, and his vineyard was adjoining the fair grounds, while my grapes had to be transported over one hundred miles. If he had shown only the same number and varieties, and the same number of bunches of each, I could have beaten him easily on collection. Mr. Lawrence Young, at that time president of the society, told me he regarded my collection as much superior to Mr. Kennedy's. In every case in which we both showed the same variety, *I came off best, both as regards appearance and flavor!* In fact Mr. K. himself expressed doubts, before tasting, in regard to the correctness of the names of certain varieties, because they were so much superior to his in size and appearance!

I first used paper bags for covering about nine years ago, but only for covering a sufficient number for exhibition purposes, and I give you my experience. Note particularly that I never covered them earlier than when about half grown. I think the bags do not afford much protection against mildew and rot [perhaps because not applied early enough.—B], but they do protect from the attacks of insects, and birds, and from sunburn. All white grapes will generally remain of greenish color when covered—*i. e.*, they do not take on the yellowish tinge, except in a slight degree, but the red and purple varieties all color beautifully under such circumstances, and are superior in flavor, as well as appearance, to the majority of those ripened in the ordinary way.

In this climate the hot sunshine is injurious to the perfect development and appearance of the grapes, and I have always got a larger number of perfect bunches from *one hundred* covered than from *one thousand* left exposed. Muslin bags answer almost as well as paper, but they do not shed rain as well, and on the whole I prefer the paper.

In conclusion, I will say that I have always been victorious at the fairs when I have shown my grapes in competition, except in the single instance mentioned, and that was not because my specimens were inferior, but because many of my specimens were injured in transit, and had to be shown against Mr. K.'s, many of whose varieties were exhibited in large quantities, and were transported a very short distance.

Respectfully yours,

JOHN M. YOUNGLOVE.

The foregoing letter was published in *The Ohio Farmer* in May, and Mr. Kennedy has made reply, through a Louisville paper, in which he denies that his collection of grapes, at the fair referred to, was any larger than Mr. Younglove's, or that he ever exhibited over fifty-five varieties. He also reasserts that the grapes which had been covered with paper bags were deficient in color, although well developed in size. He also gives the following portions of a letter received by him from G. W. Campbell, of this State:

I shall have pleasure in presenting such portions of your letter to the association of nurserymen as refers to the use of paper bags as protectors of grapes, and can add my own experience in confirmation of your views. I have used the paper bags, and found them to interfere both with natural color and to impair flavor and quality of the fruit. There is, in my opinion, no question as to the superiority of the net to paper bags.

The French people use what they call *sacs economiques*—something finer than mosquito net, but with more substance, keeping its shape better, but sufficiently open to admit air and partial sunlight, and affording perfect protection against birds, and all other advantages which paper bags could have, without their objections.

"BLACK KNOT" ON PLUM AND CHERRY TREES.

By the published reports of meetings of the Cincinnati Horticultural Society, it appears that the disease called "black knot" has appeared on plum trees in the neighborhood of that city, and apprehension is felt that it will spread, as it has done in several eastern States, so as to cause ruin among the Damson plum and Morello cherry trees of that region. The opinion is expressed that the disease is caused by an insect, and this belief was formerly held by many persons elsewhere, but is now generally abandoned, as the malady has been shown to be a fungus growth, starting from beneath the bark.

This disease has been quite common and destructive in some of the New England States, also in portions of New York and Pennsylvania for the past forty years or more. I was long familiar with it in western New York, and have seen cases of it west of Buffalo, along the lake shore; but in my residence of over thirty years in Ohio, I have seen no cases of it where it was not confined to young trees, planted within a year or two, that had been grown in eastern nurseries, and in these it was stopped readily by cutting away the affected branches as fast as it appeared, during one entire season. But as thousands of plum and cherry trees grown in eastern nurseries have been planted in Ohio during the past few years, and many of the owners are quite uninformed as to this disease or the means of its prevention, it will not be at all strange if it is found to exist, almost unobserved as yet, in several parts of the State. I had a little visitation of it at the Columbus nursery nearly twenty years ago, on some plum stocks brought from the east the year previous; but a free use of the pruning knife stopped the mischief. From the fact that our State had been so long exempt from the "black plague," most of our fruit-growers have cherished the belief that there is something in our climate or atmosphere that is not favorable to the growth of this peculiar fungus. It may be, however, that our exemption thus far has been because its spores (seeds) have not been produced so plentifully at any place as to be wafted to surrounding trees, or found lodgment where circumstances favored their vegetation. If due vigilance is used, it is possible that the disease may still be exterminated, and kept from our domain for many years to come.

My chief object in writing this is to exhort the owners of plum and Morello cherry trees, especially of young trees brought from eastern nurseries, to examine them at this time, as the mischief can best be seen while the leaves are off, and it has also been shown that the fungus spores ripen during winter. Those who do not know the disease will easily recognize it by the "black knots" or warty excresences, from one to three inches in length, on the side of small branches. These branches should at once be cut off several inches below the protuberance, and burned. Then, the coming summer, look over the trees occasionally to see if any fresh eruptions of the disease are taking place, and if so, cut all away as soon as discovered. The swellings will then be of a greenish color, and so soft and juicy as to attract the curculio to deposits its eggs in them, if fruit is not plenty; and the presence of these curculio larvæ has given rise to the belief that insects were the cause of the disease. But on careful observation it has been found that no marks of insect work are visible in the earliest stages of the disease, and the beginning of the swelling is always beneath the bark, where not accessible to insects.

Prof. Farlow, of Harvard University, made very elaborate microscopic investigations of this black knot fungus, which he calls *Sphæria morbosa*, and also of the American grape mildew, *Peronospora viticola*, of which reports with illustrations are given in the Bulletin of the Bussey Institute, part V, 1876.

In Massachusetts and some other sections the black knot has caused almost an entire failure of the Damson and other plum trees, also Morello cherries. In western New York the Damsons are generally the first to suffer, then Morello cherries. But there are many sections, as around Rochester, where but little serious loss has occurred from the disease, doubtless because the people are intelligent enough on the subject to cut away and destroy its first manifestations.

I will thank persons to drop me word, by postal card, of any localities in Ohio where the black knot exists, stating whether of long standing or otherwise, and how widely extended.

M. B. BATEHAM.

The foregoing was published in the *Ohio Farmer*, and its substance in the *Grange Bulletin* in March, 1879. Since that time I have received information that the disease has long prevailed, causing the destruction of most of the Morello cherry and some Damson trees in the eastern portions of Summit county, and parts of Medina, adjacent. Similar reports have come from sections of Tuscarawas and Harrison counties, showing that the malady has got pretty strong foot-hold in the State, and should be met by energetic efforts to check its spreading. It does not appear to have attracted the attention of fruit-growers as it should.

THE YELLOWS IN PEACH TREES.

This disease, which has hardly been known in Ohio, except by name, has caused much trouble and apprehension among the peach growers of the lake shore district, in Michigan, for a year or two past. It has ruined quite a number of large orchards, and seems to be still spreading, in spite of the efforts to arrest it by cutting down and burning all affected trees, as is done by compulsory law. It appears, too, from recent accounts, that the disease made its appearance the past season, and is spreading rapidly this summer in the lake shore peach orchards of Niagara county, New York, so that there is reason to fear that the lake shore region of Ohio will have a visitation of the malady.

The form of the disease, as manifested, is more contagious and rapidly fatal than has been known among eastern peach growers for quite a number of years past, although many years ago it was nearly as destructive in some portions of New Jersey and Maryland, where peach culture had to be entirely given up for a time, on account of its ravages, but has since been resumed without its recurrence. But little is really known as to the nature of the disease, or means of its prevention. It is presumed to be a form of fungus poison, the spores of which are very minute and carried in the atmosphere, and especially with the pollen of the blossoms, from tree to tree. Its manifestations are, the premature ripening of the fruit, and the formation of clusters of small twigs on the branches, with thin and yellowish leaves, as is sometimes seen on old trees that are starved or badly injured by the winter. The idea that the disease was carried to Michigan in young nursery trees grown in Ohio has been advanced by one or two writers, but is disproved by the fact that the disease has never prevailed in a contagious form in this State, and is not known at all in the sections where the trees referred to were grown.

OFFICERS AND MEMBERS

OF THE

OHIO STATE HORTICULTURAL SOCIETY

FOR THE YEAR 1879.

President—Dr. J. A. WARDER, North Bend.
Vice-President—N. OHMER, Dayton.
Secretary—M. B. BATEHAM, Painesville.
Treasurer—G. W. CAMPBELL, Delaware.

L. Weltz, Wilmington,
J. J. Harrison, Painesville,
G. M High, Middle Bass Island,
G. H. Miller, Norwich,
Geo. W. Trowbridge, Glendale,
Members of the Committee ad interim with above officers.

Simon Emerick, Alexandersville.
Andrew Ekey, Ashland.
Wm. B. Storer, Akron.
Thos. Rhodes, “
Samuel Barr, Amanda, Fairfield county.
J. Edgerton, Barnesville, Belmont county.
Wm. Stanton, “ “
Andrew Hale, Bath, Summit county.
Henry Gulick, Bevis, Hamilton county.
Geo. Dana, Belpre, Washington county.
R. J. Black, Bremen, Fairfield county.
G. H. Coulson, Buck's, Columbiana county.
John K. Neisz, Canton.
Joseph Morris, Cardington.
J. C. Anderson, Carlisle Station, Warren Co.
S. H. Hurst, Chillicothe.
J. R. Hurst, “
Wm. McKellar, “
S. S. Jackson, Cincinnati.
Chas. C. Keeler, “
Joseph Perkins, Cleveland.
Chas. Pease, “
M. A. Wilhemy, “
S. B. Marshall, “
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M. E. Dresbach, Circleville.
N. Julian, “
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G. S. Pickett, Collins, Huron county.
J. D. Bruce, Chesterville, Morrow county.
M. Crawford, Cuyahoga Falls.
G. H. Lodge, “
R. W. Steele, Dayton.
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N. Ohmer, “
J. S. Broadwell, “
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Henry Hadlich, “

E. E. Barney, Dayton.
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Chas. Ritchey, "
John Davis, "
J. L. H. Franke, "
T. M. Sullivan, "
Dennis McCarthey, Dayton.
G. W. Campbell, Delaware.
F. P. Vergon, "
W. Bennison, "
Isaac Williams, Edinburg.
R. A. Hunt, Euclid, Cuyahoga county.
Jerome Tice, Elenor, Clermont county.
J. A. Mathias, Friesner, Hocking county.
George J. Streator, Garrettsville.
G. W. Trowbridge, Glendale.
George W. Dean, Kent, Portage county.
M. E. Sweet, Kirtland.
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Addison Kelley, Kelley's Island.
Chas. Carpenter, "
D. P. Egbert, Lebanon.
J. P. Mardis, "
J. S. Snyder, Lancaster.
J. A. Fetters, "
J. K. Williams, Lexington.
M. F. Dean, Lindenville.
J. H. Creighton, Lithopolis.
F. Pentland, Lockland.
B. T. Berlien, Louisville, Stark county.
W. C. Pinkham, Loveland.
F. R. Palmer, Mansfield.
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Jacob Pfrimer, Milford.
George M. High, Middle Bass Island.
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C. W. Ensign, Madison, Lake county.
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G. F. Newton, Millersburg.
Daniel Duer, "
T. T. Finny, Nashville, Holmes county.
J. M. Vandervort, New Antioch, Clinton Co.
L. J. Cahoon, North Dover.
J. A. Warder, North Bend.
R. H. Warder, "
G. & S. Boalt, Norwalk.
C. & J. Brown, "
G. H. Miller, Norwich, Muskingum county.
S. A. Bushnell, Oberlin.
Dr. H. C. Beardsley, Painesville.
M. B. Bateham, "
Jesse Storrs, "
J. J. Harrison, "
Jacob Gerwig, Paris, Stark county.
J. L. Teal, Perrin's Mills, Clermont county.
R. H. Hayman, Portsmouth.
James Truit, Quincy, Ky.
F. W. Woodbridge, Ravenna.
H. Y. Beebe, "
J. H. Way, "
W. Williamson, "
Theo. Clark, "
Levi Stump, Richville, Stark county.
A. J. Rohr, " "
W. W. Hubbell, Rutland, Meigs county.
Gen. G. W. Lindsley, Sandusky.
D. C. Richmond, "
S. M. Lentz, Somerset.
J. T. Warder, Springfield.
P. H. Murphy, "
J. S. Boynton, Stryker, Williams county.
Waldo Fogg, Salem Center, Meigs county.
E. W. E. Koch, Toledo.
J. R. Robison, "
S. S. Ketcham, "
H. Kellogg, "
Samuel Bement, "
Chas. Lauppe, Urbana.
L. M. Ayres, "
Ed. Mantey, Venice.
Wm. Hagler, Washington C. H.
J. P. Farnsworth, Waterville, Lucas Co.
H. G. Tyron, Willoughby.
Parker Osborn, Wilmington.
Leo. Weltz, "
J. Jenkins, Winona.
Francis Granger, West Toledo.
J. Hughes, West Windsor.
S. R. Moore, West Zanesville.
Leveret Grover, Windsor.
Perry Wehr, Youngstown.
Geo. Borts, "
M. Milton, "
George C. Townsend, Zanesville.
W. A. Graham, "
H. G. Andrews, "
W. J. Townshend, "

TREASURER'S REPORT, 1878–9.

RECEIPTS.

Amount in the hands of Treasurer, April 1, 1878	$565 97	
Appropriation from State	500 00	
Fees of members, from April 1, 1878, to April 1, 1879	75 00	
		$1,140 97

DISBURSEMENTS.

Printer's bill—500 copies annual report (paper and press-work)	$35 00	
Other printing—circulars, hand-bills, etc	15 75	
Postage on 400 reports, $12.00; on circulars, $7.00	19 00	
Postage stamps and postal cards, for year	7 50	
Envelopes for circulars and letters (1,000)	3 00	
Express on fruits, books, etc., janitors and incidentals	7 15	
President's expenses attending meetings (two years)	86 95	
Vice-President's “ “	10 00	
Treasurer's “ “	26 02	
Secretary's “ “	58 40	
Committee's—Leo Weltz	29 05	
“ J. J. Harrison	51 85	
“ G. H. Miller	24 05	
“ Geo. M. High	18 95	
Expenses of committee at Toledo and islands in 1877	12 00	
Printing and express bill at Toledo meeting (omitted)	8 10	
Secretary's salary, 1 year to April 1	250 00	
“ expenses at Columbus, on eleventh report	21 00	
		$683 77
Balance on hand April 1, 1879		$457 20

Members of the Society who have not paid their annual fee ($1) for 1878, are requested to remit the same by mail to the Secretary or Treasurer, unless they attend the meeting in Columbus, and pay then. Persons wishing to join the Society and receive the reports, circulars, etc., can do so on payment of the annual fee.

SPECIAL NOTICES FOR 1879.

THE OHIO STATE FAIR

Occurs again at Columbus, August 25th to 29th. Liberal premiums are offered for fruits flowers, and vegetables, and a grand display may be expected. Leo Weltz is superintendent of this department.

A meeting of the State Horticultural Society will be held on Wednesday evening of the week of the Fair, as usual, in the Board of Trade Room, City Hall for the examination of new or rare kinds of fruits. Persons having such fruits are requested to bring or send specimens. Invitations for the place of holding the annual meeting of the Society will be in order at this meeting. It occurs early in December, and lasts three days.

THE NORTHERN OHIO FAIR

Occurs near Cleveland, September 1 to 6. Its horticultural departments are always very attractive—a fine display of fruits and vegetables, and that of plants and flowers excelling all others in the State.

SOUTHERN OHIO FAIR,

At Dayton, September 22 to 26.

TRI-STATE FAIR.

At Toledo, September 8 to 13.

AMERICAN POMOLOGICAL SOCIETY,

Biennial meeting at Rochester, New York, September 17, 18, 19, in connection with the Western New York Agricultural Fair.

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**

APPENDIX.

THIRD ANNUAL REPORT

OF THE

OHIO STATE FISH COMMISSION

MADE TO THE

GOVERNOR OF THE STATE OF OHIO

FOR THE YEAR 1878.

REPORT OF COMMISSIONERS.

To His Excellency R. M. BISHOP, *Governor of Ohio:*

The Ohio State Fish Commissioners, in accordance with the requirements of an act passed April 12, 1876, amendatory of an act passed March 29, 1875, providing for a "Commission of Fisheries" for Ohio, and defining their duties, respectfully submit this, their third annual report.

The organization of the present Board of Commissioners was somewhat delayed by the absence, in Europe, of one of the members. At a meeting held in Toledo, September 20, 1878, the following organization was effected:

President—John C. Fisher, Coshocton.
Treasurer—Robert Cummings, Toledo.
Secretary—L. A. Harris, Cincinnati.

E. D. Potter was appointed Superintendent of the State Fish Hatchery at Toledo.

We may, with positiveness, say that the past year has been one of marked progress in all that relates to the cultivation, restoration, and protection of fish. The most encouraging results have attended the efforts and work in this direction. Of this there is abundant evidence in the recent legislation and in the annual reports of the Fish Commissioners of the various States. The interest in fish culture is spreading in all directions, and the subject at last is securing that attention which its importance demands.

The science and art of fish culture is no longer in doubt, but has become as fixed and on as reliable a foundation as that of any other live stock raising, and its profitable yield to the intelligent cultivator is certainly not less remunerative for the capital invested than any other live crop he can cultivate.

The interest in fish culture awakened in America in the last decade has increased with each recurring year, and its bearing upon the propositions to replenish our barren or partially exhausted rivers, lakes, and ponds with food fishes is being more minutely and intelligently considered. The published official reports of the Commissioners of Fisheries of Territorial, State, and general governments abound with convincing evidence of the benefits accruing from the fostering care now being bestowed on this very important interest. Typical of these gratifying results is the universal testimony establishing the fact that the catches of anadromous fishes in the rivers and bays of the New England and Atlantic coast States, and of what are known as the fish of commerce of Erie and other of the great lakes, has in recent years, and especially during the last fishing season, been largely in excess of the average annual yields.

The annual hatching and successful planting in the waters of the United States and North American Provinces of tens of millions of young fish hatched from the spawn of fish by artificial means, has established beyond question in the public mind the feasibility of increasing the supply of the desirable food fishes to an almost unlimited extent. It was only after European governments and Trans-Atlantic scientific societies had demonstrated the usefulness of active and intelligent efforts to artificially propagate fish, that the subject was considered by any of the United States; and it is scarcely more than a decade that the idea of artificial propagation on a liberal scale was entertained and attempted here with a view to re-stock or replenish our waters.

Fish culture, as now practiced, with the exception of a few mere experiments, it is claimed by eminent authorities, had its origin with the French nation, and the French people and government were the first to patronize and encourage it. Speaking of the importance of fish culture, one of her ministers said, in an address, that "this industry, properly encouraged, would keep her people from asking for meat as well as for bread." Although by the misfortune of war France lost her great hatching establishment at Huningen, its inauguration and development of the science and art of fish culture has borne abundant fruit all over Europe and in America. The German Confederation now expends annually hundreds of thousands of dollars in rendering effective the work of her fish culturist associations, which have among their most active members such distinguished personages as Count Bismark, Count Munster, the Grand Duke, and others high in authority; and through the agency of these associations hundreds of rivers and lakes that were at one time almost barren of fish, are once more teeming with the finny tribe.

The Assistant Secretary of the College of France, in a report to the Minister of Public Works, says: "Before reviewing the establishment which I have visited, I will mention one fact selected from a large number. The inhabitants of the village of Vellorbe, near Jounge, about twenty years ago lived from the fisheries of the river Orbe; by exhausting this river, which was rich in the salmon kind, without ever replenishing it, the fishers and their families were reduced to want; but their school-master, hearing of fish culture, commenced experimenting; the villagers, seeing that his experiments were successful, appropriated a few hundred francs to assist him in his enterprise, and now the river swarms with fish, and according to the official report there are now eighty families that live entirely off these fisheries."

The grand river systems of Ohio, with her wide extent of lake coast, afford an area of food production which properly cultivated may be made to yield vast additions to our food resources, and in value bear no insignificant proportion to the staple products of our agriculture.

There are now established by law, for work in fish culture, a United States Fish Commission, and boards of fish commissioners in nearly thirty States and Territories. The public has come to take a more comprehensive view ot the subject, and the masses of the people in Ohio are manifesting a lively interest in plans looking to the consequent necessity of increasing the supply in order to cheapen the cost of fish indigenous to Ohio waters. Ex-Governor Noyes, in his message to the General Assembly in January, 1874, tersely called attention to the importance of this subject in the following language:

> "When laborers are out of employment, when times are hard and money scarce, the minds of men naturally and properly turn to the consideration of matters affecting the price of subsistence—the cost of living. Certainly there is no food more healthful or more palatable than the best varieties of fish which are found in our lakes and rivers. Yet the supply has been growing less year by year, until it can no longer be regarded as a common and cheap article of diet, but should be classed with the luxuries, which only the rich or those in comfortable circumstances can afford. It is no longer a question whether or not it is possible to re-stock our inland waters with fish. Experiments in various parts of the country have been made on so generous a scale that it is now certain we can repair the waste and consumption which have produced the present scarcity. And this can be done with comparatively little cost. The delicious white-fish of the lakes, instead of costing ten cents per pound, as they now do when placed upon our tables, ought to be afforded for four cents at most. But to affect this there must be a more plentiful supply."

Since the creation of a Commission of Fisheries for Ohio, with the authority and means to work, dating only from the spring of 1875, increased interest has been manifested throughout the State upon the subject of pisciculture. This interest is not merely a matter of curiosity or idle inquiry, but the healthy and natural outcome of the diffusion of information upon the subject, which reaches the people through newspapers, periodicals, and magazines. This is evidenced in the growing demand for Land-locked and California salmon, trout, and black bass, to stock waters for private enterprises, as well as for towns and counties.

Your Commission, with the limited means at its command, has directed its efforts chiefly to increasing the supply of white-fish in Lake Erie, and the introduction of new varieties of fish into some of the rivers and reservoirs. The catch of white-fish last November by the pound fishermen, along the south and west shores of Lake Erie, is reported as being greatly in excess of the yield of most previous years. It is the opinion of some of the fish packers and dealers that the increase in the catch is largely attributable to the plant of white-fish fry in the springs of 1876 and 1877. The labors of our predecessors have, therefore, already borne satisfactory fruit, and what has heretofore been a question of hope and faith, has become a living and tangible reality.

Your Commissioners have not attempted anything in the way of artificial propagation of brook trout. This is a much prized fish, and during the last year we have had many inquiries and applications from all parts of the State for trout to stock private ponds and small streams. While entertaining doubts touching the suitableness of our brooks and creeks for the propagation and full development of trout, especially throughout the central and southern portions of the State, we contemplate the introduction of this fish into a number of the clear and rapid-running streams, with a view to testing their adaptability to Ohio waters. We believe that in the cold and deep pools and swift-running streams of the northern and north-eastern parts of the State trout will live, mature, and replenish. Castalia Spring and Creek, in Erie county, where trout were planted five years ago, demonstrates that some of the tributaries of Lake Erie are admirably adapted to the existence of trout. In the more sluggish streams of the central and western portions of the State, and in the warmer waters of the southern slope, it is doubtful if trout will flourish therein.

Through the generosity of Prof. Baird, the United States Commissioner of Fisheries, we have been supplied at the State hatchery with a few thousands of the ova of the fresh-water or land-locked salmon, which were successfully hatched and planted What has been done in Ohio with this species of fish was in the way of experiments merely, and time will disclose whether or not further effort in their propagation will avail.

Your Commissioners have, during the last three years, hatched and made several plants of the California salmon fry. The report of the superintendent of hatchery shows the number bred and distributed in the waters of the State since the inauguration of the work. The resu
of these experiments will probably not show their practicability
utility before 1880. Should these become acclimated to our
we have reason to expect, the salmon fishery may be made
and profitable industry. We incline to the opinion tha

the salmon family will thrive during its minority in Lake Erie and the rivers of the State, but whether they will remain therein and be able to reproduce their kind in these waters is a matter that the future must decide.

An impression prevails in portions of the central and southern parts of the State that the Commission is neglecting interior waters at the expense of the white-fish for Lake Erie. People read that we are annually depositing millions of this variety of fish along the south shore of Lake Erie, while only a few thousand fry are planted in the inland lakes, ponds, and rivers. But it must be borne in mind that of the varieties habitats of Ohio waters, we have been entirely successful only in the artificial propagation of the ova of the white-fish, and which is suited probably for none other of the waters of the State except Lake Erie. If any portion of the State has waters barren of the black bass, and that fact is made known to the Commission, no time will be lost in transplanting therein the fry or parent fish of this popular game fish.

The report of the superintendent of the hatchery, made to this Commission, and the treasurer's financial statement, which are herewith submitted, will, we presume, disclose sufficiently in detail the expenditures, labors, and operations of the past year.

Respectfully submitted,

JOHN C. FISHER,
ROBERT CUMMINGS,
L. A. HARRIS,
Commissioners.

January 14th, 1879.

REPORT OF SUPERINTENDENT OF HATCHERY.

OHIO STATE FISH HATCHERY,
TOLEDO, *January* 15, 1879.

To Messrs. John C. Fisher, Len. A. Harris, and Robert Cummings, Fish Commissioners:

GENTLEMEN: My last report brought the operations of the hatchery at Toledo down to the 1st of April, 1878, by which it will be seen that at that date the fry had all, both salmon and white-fish, been successfully planted in the lakes and streams in and adjoining the State, and the hatchery was closed for the season.

During the summer an addition to the hatchery, as recommended in my last report, was constructed, at a cost of a little less than four hundred dollars. This consists of a shed in the rear of the main hatchery, twelve by forty feet, in which are placed five water-tight tanks running the whole length of the shed, through which a flow of water can be introduced, capable of supporting 20,000,000 or more of young fish as they are taken from the hatching-boxes.

Nothing more was done in the hatchery till the 15th of October, when I received from the salmon hatchery on McLeod River, California, 50,000 eggs of the *Salmo quinnat* or California salmon, over ninety-five per cent. of which were, by the middle of November, hatched, and are now in the hatchery in good condition. By the 20th of November we had secured about 12,000,000 of white-fish spawn, which were placed in the hatchery, of which there are now remaining from six to eight millions in a satisfactory state of forwardness, and are in good condition.

From our last year's experience it was found that out of over ten millions of eggs taken at North Bass Island, not more than fifty per cent. were saved, owing to the delays in transportation—first by steamer to Sandusky, then by express to Toledo, causing delays at each place of transhipment; whilst those taken at Detroit River and in the Maumee Bay, being delivered at the hatchery on the day they were taken from the fish, were nearly all saved.

To save the great expense of assorting the eggs taken at the Islands, I had determined, if possible, to secure eggs at such points as would enable us to place them in the hatchery on the day they were taken. Before the spawning season commenced I had placed a corps of experienced and competent men on Detroit River, at Monroe, Michigan, at Cedar Point, Maumee Bay, and at Huron. Before the spawning season commenced the fishermen on Detroit River had pulled out their nets, and my man then failed to secure any spawn. The catch of spawning fish at Monroe was so light that that point was abandoned. At Cedar Point we secured about three million of good eggs, which were placed in the hatchery the day they were taken. From Huron Mr. Henry Douglass furnished a little over 4,000,000, which were received in good order.

Finding we were not likely to secure at these points all the eggs we wanted, I proceeded with two assistants to Put-in-Bay Islands, where we secured over 5,000,000, which, owing to the delays in transportation, before mentioned, yielded only about sixty per cent. of good eggs. The real spawning season only lasted about four days, and the best part of it was nearly over when we reached Put-in-Bay. In future it will be necessary to have a larger force of spawners at the fisheries at the commencement of the fishing season; and although it may add considerably to the expense, it will insure a full supply of spawn, which we cannot be sure of in any other way.

The Clark patent, now in use at the hatchery, is probably as successful a mode for hatching as any employed in any of the hatcheries, but it is attended with a considerable amount of labor in the care of the eggs. The Wilmott patent of hatching in cans almost entirely does away with the care of the eggs in the hatchery. It consists of a number of glass or tin cans, holding about a gallon and a half, into which a stream of water is introduced by means of a tube, which delivers the water at the bottom of the can, keeping the eggs suspended and in constant motion in the water, keeping them clean and free from fungus, which is liable to contaminate the eggs lying quietly in the hatching trays, unless overhauled and the bad eggs removed by hand at least every other day.

To determine the merits of the can or jar system of hatching, I visited last summer the hatcheries at Detroit, and at Sandwich, in Canada, and was informed by the overseers at both places that the plan was entirely successful. The overseer at Sandwich informed me that he hatched 8,000,000 of white-fish in his cans, requiring not more than three hours' labor in a day in their care.

In all hatcheries the utmost dispatch is necessary, on receipt of the eggs, in separating the good from the bad; for the spawning season is short and the eggs are nearly all received within one week's time, and if the good and the bad eggs are suffered to remain together any considerable length of time, the whole will be lost. The fungus formed on an unfecundated egg, very shortly extends itself to the whole mass, and destruction follows. To avoid this, the trays containing the eggs for the first week in the hatchery must be overhauled every day, and the unfecundated eggs removed by hand. In the cans, the eggs being continually suspended in the water, no such contamination occurs; and separation of the good from the bad is easily accomplished; for although an unfecundated egg sinks to the bottom in still water, it is yet lighter than the fecundated egg, and the boiling up of the water in the can sends the unfecundated egg to the surface, from which it is removed with a feather, and is carried off by the waste or spill from the top of the can. I would recommend a partial trial of this process the coming year. One two-gallon can will contain fifty thousand eggs, and it will cost about one dollar and fifty cents, when suitably placed for use.

We have kept the water in the hatchery at about thirty-four degrees, the cold weather, thus far, proving favorable in prolonging the hatching to a period when the lake will be free from ice, and the fry may be safely planted.

Below will be found an account of receipts and disbursements from April 1st, 1878, to 15th of January, 1879.

I am preparing a statistical account of the lake-fishing interests, which will soon be ready, and may be added to your report as an appendix, and can all be printed together.

Very respectfully,

EMERY D. POTTER, *Supt.*

EMERY D. POTTER, IN ACCOUNT WITH OHIO FISH COMMISSIONERS.

Cr.

1879—Jan.	14.	By cash at sundry times of Robert Cummings, Treasurer..	$2,717 00
		Balance on hand April 9, 1878	423 14
		Total	$3,140 14

Dr.

To cash paid laborers in hatchery see pay-rolls, marked 1, 2, 3, 4, 5, 6, 7, and 8.

1878—Oct.	26.	Pay-roll No. 1	$30 00
Nov.	9.	" " 2	37 00
Nov.	23.	" " 3	274 00
Nov.	30.	" " 4	163 94
Dec.	7.	" " 5	107 00
Dec.	14.	" " 6	45 33
Dec.	28.	" " 7	72 00
1879—Jan.	4.	" " 8	69 25

Paid for work on addition to hatchery, as per voucher.

1878—		Robert T. N. Lees, 18 days, $2	$36 00
		F. Grant, 22 days, $1.50	33 00
		Henry Douglass, 10 days, $1.50	15 00
		A. J. O'Niele, 13¾ days, $1.50	20 62
		To error in last settlement	69 00
July	12.	Expenses to Kelly's Island and Sandusky, with commissioners to look after black bass hatchery	17 50
		Paid for 3 tin pans 90 cents; street railroad at Toledo $3.00.	3 90
		Postage to date $3.75; telegraph $1.50; express 60 cents	5 85
		Paid for care of hatchery, boarding up windows, etc	10 00
Aug.	26.	Expenses to Detroit and Sandwich, Ontario, to examine hatching cans	9 65
Sept.	10.	Expense to Castalia to look after young salmon	3 50
Sept.	12.	Expense to Kelly's Island to look after hatchery, etc	6 50
Oct.	25.	Expense to Ecorse, Michigan, to secure spawn	6 75
		Paid for coal tar $1.50; cartage 75; furnace $3.50	5 75
Nov.	7.	Paid Henry Douglass for expenses to Huron to secure spawn $10; express 25 cents; charcoal 60 cents	10 85
		Postage $3; wire cloth $6.50; tacks $1.20	10 70
		Expense to Cedar Point, with man, to take spawn	8 75
Nov.	11.	Cartage on spawn boxes $1.75; street railroad $4.50	6 25
Nov.	12.	Expense to Monroe, Michigan, for spawn $5.50; cartage 75 cents	6 25
		Cartage $1; board of two men at Monroe, $3	4 00
Nov.	14.	Paid fare to Put-in-Bay for spawn	1 50
		Expense at Put-in-Bay $5.50; Middle Bass $8	13 50
		Man and boat at Middle Bass 3 days	8 50
		Fare to North Bass 30 cents; expense at North Bass $6.50	6 80
		Board at North Bass $5.00; hire of man and boat	3 50
		Expense at Sandusky for spawn $6.75; cartage $2.50	9 25
		Two tin pails and two pans at Sandusky	2 20
		Steamboat fare from Sandusky to Put-in-Bay and return	1 50
		Fare from Clyde to Sandusky and return	70
		Paid E. W. Hawthorne on account expense taking spawn	25 00
		Paid Pratt, cartage bill, $6; Cox & Davis $3	9 00
Nov.	24.	Paid steamboat fare $1.50; freight 60 cents; expense at Sandusky $5.50	7 60
		Hack and cartage at Sandusky on spawn	1 25
Dec.	1.	Expense to Castalia for trout spawn, with man	5 50
		Paid E. W. Hawthorne on account, expense at Castalia	5 00
		Expense at Clyde $1.50; board at Castalia $4.50	6 00
Dec.	3.	Paid for team $2; expense at Clyde $1.50	3 50
		Cartage at Toledo $1.75; pan and pail at Castalia, $1	2 75
		Paid subscription for Chicago Field	4 00
		Paid subscription for Country Gentleman	2 50
		Hamilton & Co. for wire cloth	1 30
		Paid for zinc pail and pans	50

Dec.	2.	Paid Lerhu for team	$3 00
		Jordan's Manual Vertebrates Fishes, etc., $2.50; scales, 50 cents	3 00
Nov.	12.	Paid Charles Carpenter	2 67
		Wm. Riches, engraving	2 55
1879—Jan.	31.	Salary Superintendent ten months, $100	1,000 00
		Total expenditures	$2,740 69
		Balance due Commissioners	399 45
		Total	$3,140 14

APPENDIX TO ANNUAL REPORT

OF

SUPERINTENDENT OF HATCHERIES.

ARTIFICIAL FISH-BREEDING IN OHIO.

OHIO STATE FISH HATCHERY,
TOLEDO, *February* 15, 1879.

To the Ohio Fish Commissioners:

1853.

There were fecundated and successfully hatched, by Dr. Theodatus Garlick, of Cleveland, a large number of brook trout (*Salmo fontinalis*) eggs, in a hatchery near Cleveland, in a small stream emptying into the Cuyahoga river. This was, probably, the first experiment in artificial fish-breeding on this continent. They were secured by suitable dams across the stream, separating the large fish from the small fry. They grew rapidly for about two years, when a freshet carried away the dams, sending the trout into the Cuyahoga, and very few of them were seen afterwards. This ended the Doctor's experiments.

1873.

John Hoyt, of Castalia, Erie county, procured and hatched, at Castalia Springs, two thousand eastern salmon (*Salmo salar*) eggs, and set them free in Castalia Spring stream, which puts into Sandusky Bay. The same year he hatched quite a number of brook trout, which were set free in the same stream. These have multiplied in this stream until it has become, probably, the best stocked trout stream in America, and being now in the hands of private parties, who keep a good watch over it, it is likely to remain so.

The salmon found their way into Sandusky Bay and Lake Erie, where they are occasionally taken, weighing from three to four pounds.

In 1873, the General Assembly made the first appropriation, looking to artificial fish-breeding, and this being but one thousand dollars, no progress was made in the enterprise.

In March, 1875, an appropriation of ten thousand dollars was made, and active operations commenced in the fall of that year, resulting in the construction and equipping of a hatchery at Toledo, thirty by one hundred feet, capable of hatching 20,000,000 of white-fish eggs.

The breeding of fish has been confined exclusively to the white-fish (*Coregonus albus*) of the lakes, and three varieties of the salmon, viz., *Salmo salar*, *Salmo quinnat*, or California salmon, *Salmo sebago*, or land-locked salmon.

Herewith is appended, in a condensed form, a history of the operations of the Commission at the State Fish Hatchery up to January 1st, 1879:

SHAD.

There were transferred, by the United Fish States Commission, young shad, as follows:

July 3, 1872, in the Cuyahoga, at Kent	"a few."
June 24, 1873, Ashtabula	50,000
" 25, 1874, Grand River, Lake county	60,000
" 26, 1874, Sandusky River, at Fremont	60,000
July 9, 1875, Buckingahela, at Bellefontaine	75,000
" 18, 1874, Black River, at Elyria	65,000
" 18, 1874, Huron River, at Monroeville	65,000
June 15, 1875, Scioto, at Columbus	75,000
" 23, 1875, Muskingum, at Bayard	100,000
" 23, 1875, " at Zanesville	50,700
Total number of shad deposited	600,700

CALIFORNIA SALMON (*Salmo quinnat*).

The United States Fish Commission has transferred to Ohio waters California salmon, as follows:

Dec. 10, 1873, Muskingum, at Millbrook		20,000
Jan. 13, 1874, Sandusky River, at Bucyrus		12,000
" 13, 1874, Grand River, at Eagleville		10,000
Dec. 9, 1874, Huron River, at Monroeville		10,000
" 8, 1875, Auglaize River, at Wapakoneta		45,000
" 8, 1875, Little Miami, at Sidney		105,000
Total transferred by United States Fish Commission		202,000
Mar. 25, 1877, received from Northville, Michigan, by direction of United States Fish Commissioner	30,000	
1877 and 1878, hatched at Toledo	220,000	
May, 1877, deposited in Portage River, at Elmore		15,000
" 1877, Maumee Rapids, South Toledo		15,000
Dec. 10, 1877, Walhonding River		30,000
" 10, 1877, Muskingum River		15,000
Feb., 1878, Whetstone River, Columbus		20,000
" 1878, Tuscarawas River		30,000

Dec. 25, 1877, Lake Erie, at Put-in-Bay	40,000
" 25, 1877, Castalia Spring, Erie county	10,000
March, 1878, Maumee Rapids	30,000
" 1878, Maumee River, at Defiance	30,000
" 1878, Huron River, at Huron	15,000
Total number of California salmon planted	450,000

EASTERN SALMON (*Salmo salar*), AND LAND-LOCKED SALMON (*Salmo sebago*)

1876.	Hatched 68,000, and planted in Lake Erie, at Put-in-Bay	40,000
	Maumee Rapids, South Toledo	18,000
	Sandusky River, at Fremont	10,000
	Total eastern and land-locked salmon	68,000

About one-tenth of these were land-locked salmon, and were hatched and planted together.

LAND-LOCKED SALMON.

1878.	Hatched at Toledo and planted in the Maumee River, at Toledo, from spawn received from Grand Lake stream, Maine, by order of United States Fish Commission	12,000

WHITE FISH. (*Coregonus albus.*)

1876.	Hatched at Cleveland, Castalia Springs, and Toledo	1,490,000
Received from Northville, Mich., by order U. S. Fish Commissioner		1,000,000
1877.	Hatched at Toledo	6,000,000
1878.	" "	12,000,000
		20,490,000

Planted as follows—

1876.	In Lake Erie, near Turtle Island L. House	2,480,000
1876.	In Clear Lake, Summit county	10,000
1877.	Lake Erie, near Turtle Island	3,500,000
1877.	Sandusky Bay	2,500,000
1878.	Lake Erie, near Crane creek, Ottawa county	6,000,000
1878.	Lake Erie, at Put-in-Bay	5,900,000
1878.	In Havana and Mifflin Lakes, Ashland county, 50,000 each	100,000
	Total planted up to January 1, 1879	20,490,000

SHAD.

Of the shad deposited in the waters of the State, it is reported that a few from six to eight inches long have been taken in the Scioto, at Columbus; but I doubt somewhat the correctness of the report, as none have been seen of the other plantings. Sufficient time has elapsed since the first transfer in 1872–3, to test the practicability of their introduction to our waters, and since the experiment has, thus far, proven barren of any favorable results, it seems that any further attempt to breed them in waters not accessible to the ocean would be useless—at any rate, enough has been done to test its practicability.

SALMON.

The salmon transferred to the tributaries of Lake Erie have shown favorable results.

Many have been taken in Lake Erie, showing a fair development into the perfect fish. The salmon will, undoubtedly, become a fixed denizen of Lake Erie; and although specimens of the three new varieties have been taken, sufficient time has not elapsed since their first introduction in 1876, to bring them back into their spawning grounds where they were planted; it is believed they will show themselves, by another year, fulfilling their instincts in the law of reproduction, in multiplying and replenishing the waters. Of the 105,000 planted in the Miami at Sidney, in 1875, nothing has been heard. Following their instincts they are now, most likely, somewhere in the lower Mississippi, seeking for the ocean preparatory to a return, sooner or later, to surprise the good people of the Miami Valley with a salmon breakfast.

It is not yet time to expect any thing from those planted in other streams emptying into the Ohio river, as they have scarcely had one year's residence there; yet they are probably following the Miamis, heading down stream towards the Gulf of Mexico—whether they will ever return, remains to be seen; but if they do, it will be like bread cast upon the waters, returning after many days.

It is feared that they will scarcely escape the perils of their long, sinuous and tedious journey. It has been thought by some of our fishermen, that the sea-going salmon, transferred to the tributaries of Lake Erie, would, in their search for the ocean pass over Niagara Falls and we should hear no more from them. It is believed, however, with the evidence before us, that they will remain in the deep water of the lakes until their complete development into mature fish, and then return to the places where they were first deposited, to deliver their spawn. At the hatchery at Pokogon, Michigan, there was obtained, last fall, spawn of the California salmon hatched and reared there, which was fecundated and found to be equal to the imported spawn, yet the spawners as well as the males were dwarfed, none of them weighing over three pounds. This in a great measure was probably owing to the limited quantity of water in the pond where they were reared. In the deep water of Lake Erie with its capacious feeding ground, they will, undoubtedly attain a much larger size, though not to the normal weight of those that go to the sea.

White-Fish.

There is no uncertainty about the white-fish. Their multiplication, by artificial means in the hatchery is reduced to a certainty; the same that the farmer feels in the increase of his farm stock, his hogs, sheep, cattle, and poultry. The waters of the great lakes are his home, his feeding ground. No acclimatization is neccessary for his reproduction and growth. But the white-fish have many enemies in their native waters. Not that they devour the young fish, but an army of camp followers attend them to their spawning grounds to fatten on their new laid eggs. The sturgeon, and an innumerable family of the sucker tribes, the cat-fish, the dog-fish, the eel-pout, the sauger, the lizzard, millions of herring, and finally almost every fish that swims in the water, swarm upon their breeding grounds, and almost a total destruction of their spawn ensues. The white-fish spawn in November, and one fish weighing five pounds, will furnish, in a season, twenty thousand eggs. Of these it has been estimated by experts, less than eight per cent. ever survive. By artificial means, over eighty per cent. of the spawn is fecundated and hatched in the breeding house, and safely delivered back into the lake. There is no great danger of their loss from predacious fish. They are placed in deep water, out of reach of their enemies. They at once seek the deep waters of the lake, where they find, in larvæ, the mollusk and the crustacae that abound there, an abundance of the food they like, and where they remain and fatten till they are grown and ready to return to th shoals and reefs at the upper end of the lake to deposite their spawn With the present force of fishermen and their style of fishing, without some effort to replenish, the white-fish will become extinct in the great lakes. It seems almost incumbent on the State to farm and foster this great source of food supply. White-fish, for the last season, have been sold at the fisheries, at an average of three cents a pound; a little more than the cost of handling them. I have endeavored through the fishermen and fish dealers to obtain statistics of the last two year's business along the lake shore, but the responses to my inquiries have been so meager, that it is impossible to make a general comparison of the catch in the last two years; but from what I can learn, and from my own observation in visits to the number of the fishing grounds, I am satisfied that we have, the past season, experienced the benefit of our first deposit of the 2,480,000 young white-fish in the spring of 1876. Such responses as I have obtained, show a large increase of the catch over former years. As for example: Messrs. D. Y. Howell & Son, whose fishery is on the shore near the mouth of Crane creek, in Ottawa county, writes me that their catch in

1877	were of white-fish	48,797	pounds.
1878	" "	104,813	"

They add: "You will notice that our catch this year is far in excess of the catch for years previous, and we think we have commenced to realize from your labors in the hatchery. We confidently look forward to seeing Lake Erie bountifully stocked with white-fish, through the efforts of this State and the State of Michigan."

When the white-fish is admitted to be the most delicate and wholesome fish taken in our waters, at the price named above, it must ultimately become a staple article of food for our people. It is healthy and nutritious, and may be produced much cheaper than beef and pork. Fish cultivation commensurate with the breeding grounds in and adjoining the State can scarcely be prosecuted by individual enterprise, and it could scarcely be expected when the benefits are shared by the people of the State at large. There is now scarcely a State in the Union, or a foreign State, that has not taken this matter of fish breeding in hand, and from all quarters we hear accounts of the most encouraging results. It can not be expected that in this paper a synopsis even can be given of the various reports received, but it is safe to say that they show success in every instance. Our climate is various, stretching from Maine to Texas, and each section is adapted to the growth of different varieties of fish; but to such perfection has fish culture attained, that each locality has succeeded in largely increasing the native supply. The ocean, even, has not been allowed to escape the scrutiny of the fish culturist. Her depths have been touched by his wand; she has been compelled to yield up her dominion over the fishes, and the great deep has become man's farming ground.

The experiments of the great fish king, Prof. Baird, at Gloucester, bid fair to give us ocean fishing nearer home, and although we can not expect England to pay us back our money, it is believed we shall soon be able to do without her fishing grounds.

There are many parts of the State where speckled trout may be cultivated successfully, but as their spawning time is in November, the spawning time of the white-fish, no time was allowed by our limited force at the hatchery to take spawn this season; but arrangements have been made to secure, the coming season, all the spawn necessary to stock such streams as are adapted to their growth. These will be hatched and ready for distribution by the first of March, 1880. They will not live in any but the purest living water, which the hilly portions of the State afford. Although the propagation of the trout is not expected to add very largely to the food supply, it affords a healthy recreation to the sedentary man, and a very acceptable delicacy to the citizen who will spare the time, and has the skill to capture them.

BLACK AND WHITE BASS, ETC.

I have often been requested to supply streams and ponds with the black and white bass from the hatchery, but the many attempts to hatch them, or the pike, perch, pickerel, sun-fish, or any of what is called the bony fishes, have proved unsuccessful, owing to the glutinous character of the spawn. It adheres to the first substance it comes in contact with, and can not be handled like the trout, white-fish, or salmon. The only way to stock the streams or ponds with any of the above is to transplant the parent fish, when, with proper protection, they will multiply rapidly in most of the waters of the State. The parent fishes of these varieties may be procured at any of the fisheries on the lake shore, or in most of the streams, lakes, and reservoirs throughout the State.

EELS. (*Anguilla Communis.*)

From the report of Geo. H. Jerome, Esq., Superintendent of Fisheries for Michigan, for 1878, I see that he has been successful in transplanting the eel into many of the waters of that State, where it is believed they will reproduce themselves in abundance. They are not propagated artificially, but are gathered, about the first week in June, in the head-waters of the Hudson River, New York, where the young fry swarm in immense numbers.

They are easily taken, and transported without difficulty, and may be made abundant in most of the streams of the State. They will not interfere with other fishes, not being predacious in their habits.

This fish, notwithstanding its snake-like appearance, is esteemed a great delicacy by those accustomed to it.

There is now in the hatchery at Toledo 45,000 young California salmon, from spawn received from Redding, California, the breeding establishment of the United States on McLeod River. They were hatched here in November, and are in good condition.

There are at present in the hatchery from five to six millions of white-fish eggs, which will be hatched early in March, and will be placed in Lake Erie as soon as it is clear of ice.

The facilities for hatching were enlarged the last autumn, so that now over 20,000,000 of white-fish spawn can be taken care of, and it is the intention, the coming season, to fill it to its utmost capacity. Our spawning operations extend from Detroit River to Put-in-Bay Islands, and to Huron, in Erie county, requiring a considerable force at each point to secure a sufficient quantity of spawn, as the spawning season scarcely lasts one week.

There are now three hands employed in the hatchery, at a cost of twenty-seven dollars a week.

Very respectfully,
EMERY D. POTTER,
Superintendent.

TREASURER'S REPORT.

State of Ohio in Account with Robt. Cummings, Treasurer of Fish Commissioners.

Dr.

1878—March	26.	Potter, expense	$50 00
April	5.	J. C. Fisher	71 50
	10.	Potter, expense	50 00
	10.	"	100 00
	15.	Potter, lumber bill rendered	50 00
May	4.	F. Grant	256 25
	11.	Cox & Davis, carriage	5 00
	18.	Potter	100 00
June	15.	"	50 00
	19.	"	100 00
	21.	Telegraph to Klippart	40
	24.	Postage	18
July	1.	Hoag & Neil	17 25
	10.	C. Carpenter	30 00
	10.	John C. Fisher	50 00
	17.	Potter, lumber bill	10 00
	26.	Carruthers & Rowland	13 50
	30.	Potter, lumber bill rendered	19 50
Aug.	8.	Potter, cash	10 00
	15.	"	100 00
	15.	"	100 00
	23.	E. A. Eversman	22 00
	24.	Potter, cash	100 00
Sept.	7.	Forest and Stream	9 00
	10.	Potter, cash	25 00
	12.	"	20 00
	20.	"	100 00
Oct.	5.	Lawton & Bro., lumber	143 67
	19.	Insurance	7 50
	21.	Potter, cash	100 00
	28.	"	40 00
Nov.	8.	John Greenwald, plumbing	143 73
	8.	Potter, cash	40 00
	9.	Spear, Johnson & Co., stationery	6 50
	14.	Potter, cash	40 00

1878—Nov.	16.	M. Nairy, cash, taking spawn		$10 00
	16.	E. W. Hawthorne, “		10 00
	20.	E. D. Potter, cash		100 00
	30.	“ “		480 00
Dec.	5.	“ “		150 00
	9.	“ “		100 00
	9.	“ “		50 00
	9.	E. W. Hawthorne, cash, labor taking spawn		60 95
	9.	Henry Douglass, “ “		40 70
	11.	E. A. Eversman, hardware for new hatchery		29 18
	12.	E. D. Potter, cash		522 00
	12.	Mike Nairy, taking spawn		18 75
	16.	Potter, cash		50 00
	26.	“		100 00
	28.	Gosline & Barbour, coal		24 00
	31.	Hamilton & Co., twine		78 75
1879—Jan.	8.	Potter, cash		40 00
				$3,845 31
		Cr.		
March	25.	By balance	$990 25	
Aug.	12.	By cash	2,000 00	
Dec.	9.	“	1,000 00	
			$3,990 25	
		Due Commissioners		$144 94